VAX VTX
Guide to Designing and Implementing an Infobase

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Preface

Purpose of This Manual

There are many ways to design and implement a corporate VTX infobase. This manual shows you *one* way, using the example of a fictitious manufacturing company. Even though the manual is written in a step-by-step format, it should be read as an example to be understood, not as a pattern to be copied. Adapt and modify the procedures described in this manual to suit your company's information needs.

Intended Audience

This manual is written for individuals assigned to design and implement a VTX infobase.

This manual assumes you are familiar with:

- The DIGITAL Command Language (DCL)
- A text editor (such as Digital's EDT, TPU, WPS-PLUS)
- At least one type of Digital's video terminals (such as a VT100, VT200, or VT300 series)

Operating System Information

To verify which versions of your operating system are compatible with this version of VAX VTX, check the Software Product Description (SPD), which is included in the VAX VTX kit.

Structure of This Manual

This manual is organized as follows:

Chapter 1	Introduces VAX VTX and infobase design concepts.
Chapter 2	Explains the steps in planning a VTX infobase using a fictitious manufacturing company as an example.
Chapter 3	Explains the steps in implementing a VTX infobase.
Chapter 4	Describes more advanced infobase features including mixed terminal types and remote pages.
Chapter 5	Provides design information for infobases to be implemented using the Workbench utility.
Appendix A	Contains sample infobase update (VTU) files for a fictitious manufacturing company.
Appendix B	Contains DECtalk design tips.
Glossary	Contains definitions for all VAX VTX terms irrespective of the manual in which the term appears.

Related Documentation

The documentation set for VAX VTX includes:

VAX VTX Installation Guide
VAX VTX Guide to Designing and Implementing an Infobase
VAX VTX Information Provider's Guide
VAX VTX Operator's Guide
VAX VTX Guide to Modifying the Terminal Control Program (TCP)
VAX VTX Subscriber's Booklet
VAX VTX Subscriber's Card
VAX VTX/VALU Summary Description
VAX VTX/VALU Guide to Using VAS
VAX VTX/VALU Guide to Using RUSL
VAX VTX/VALU Guide to Using ELK

VAX VTX Version 4.0 also comes with online release notes, which you can access in SYS$HELP:VTX040.RELEASE_NOTES.

A glossary for all the VAX VTX manuals is contained in this guide. A glossary for all the VAX VTX/VALU manuals is contained in the *VAX VTX/VALU Summary Description*.

Conventions

$	The dollar sign is the system prompt. It indicates that the VMS command interpreter is ready for command input.
WORD	An uppercase word in a syntax format is a required word. You must include it in the statement.
word	A lowercase word in a syntax format indicates a syntax element that you supply.
CTRL/x	This symbol indicates that you press the CTRL key and another key.

Chapter 1

Introduction

VAX VTX is a system that provides your company with the tools to distribute corporate documents and other information electronically. VAX VTX includes all the tools necessary for putting information into and retrieving information from an electronic information base (infobase).

VAX VTX is best suited for information that:

- Would ordinarily require an expensive printing, reproduction, and distribution process
- Must be updated and distributed frequently
- Must be made available to a widely dispersed audience of readers

Ideal information for a VTX system includes, but is not limited to:

- Personnel policy manuals
- Sales literature indexes
- Sales updates
- Job openings
- Interplant transportation schedules
- Newsletters
- Price lists
- Customer order status
- News stories and weather bulletins

1.1 Who Are the Participants?

A VAX VTX system supports four types of users:

Subscriber	End user (consumer) of the information
Information provider	Individual who prepares and maintains the information
Operator	Individual responsible for operating the VTX system
Infobase designer	Individual, or team, who plans the logical structure of the infobase

Subscribers are the users of the information. They use VTX to view pages of information on a terminal screen. The subscriber accesses the information by making a choice from a list of options (also known as a menu) displayed on the terminal screen, or by using the FIND function and typing a keyword or page number. To the subscriber, using VTX is much like using a library. The subscriber can read a page at a time, browse, use bookmarks, copy pages, and request help. However, the subscriber cannot alter the information.

The *information provider* prepares and maintains the information that subscribers retrieve from VTX. An information provider's job is somewhat like that of a newspaper reporter. A reporter has information to provide to an audience of readers. The reporter is not responsible for the page and section numbering scheme devised by the newspaper's editor or for the information being provided in other sections by other reporters. The reporter is responsible for the accuracy of his or her own information and for providing it within a predetermined amount of space.

The information provider has similar concerns: providing information in a format, and within a range of page numbers, determined by the infobase designer, or perhaps a VTX administrator, who is responsible for the entire VTX infobase.

The *infobase designer's* job is somewhat like that of the newspaper editor. The editor determines policy and structure for the paper, and decides what kinds of stories will be included in what section and page, how much space will be allowed, and so on.

In the same way, the infobase designer is responsible for the structure of the infobase, assigns sections and ranges of page numbers for each information provider to maintain, and, in general, implements corporate policy regarding what information should or should not be included in the infobase.

Finally, the VTX *operator* maintains the VTX accounts of subscribers and information providers, makes sure the infobase files are open so subscribers can have access to them, and in general assures that the system is running correctly.

Depending on the size of the corporation, at one extreme one person might serve as information provider, infobase designer, and operator. At the other extreme, several people might be assigned to each job. The larger the corporation and the VTX infobase, however, the more important it is for the people involved to communicate with one another regarding policy, appearance, and structure of the infobase.

1.2 Components of VTX

VTX is made up of several components:

- Infobase
- Server
- Update server
- Workbench server
- Terminal control program (TCP)
- Concentrator
- System management and information provider utilities (VTXACU, VTXCTL, VTXUPD, VTXAPMS, VTXIVU, and the Workbench)
- Print queue services

1.2.1 Infobase

VTX documentation uses the term *infobase* (short for information base) instead of *database*. This section describes why.

An infobase is all of a corporation's information that is accessible by VTX. An infobase includes all the files containing VTX pages and keywords on all the nodes within a corporation. (A *node* is an individual computer system in a network that can communicate with other computer systems in the network. *Keywords* are the subscriber's alternative to selecting menu items. A subscriber can type a keyword, and VTX will display the page with that keyword, allowing the subscriber to bypass the intervening menu pages.)

An infobase is *not* a traditional database. The differences are outlined in Table 1–1.

Table 1–1: Database Versus Infobase

Database	Infobase
Usually has limited and controlled access	Usually allows access throughout the corporation with few restricted options
Often requires knowledge of an inquiry language and of the database structure	Is menu driven and easy to use
Is inclusive and complex	Is designed with the end user in mind and uses a simple logical structure
Is maintained by a computer professional	Can be maintained by an information provider who may or may not be a computer professional
Usually requires the user to define what information is needed and how it should be presented	Organizes information in advance of the user's request; output is preformatted

1.2.1.1 Contents of a VTX Infobase

A VTX infobase is made up of *page files* and *keyword files.* The page and keyword files are the files that:

- Subscribers access when retrieving information
- Information providers update (or keep current)

The page files contain the pages of information and the keyword files contain the keywords. The page files are also known as VTD files and the keyword files are also known as VTK files.

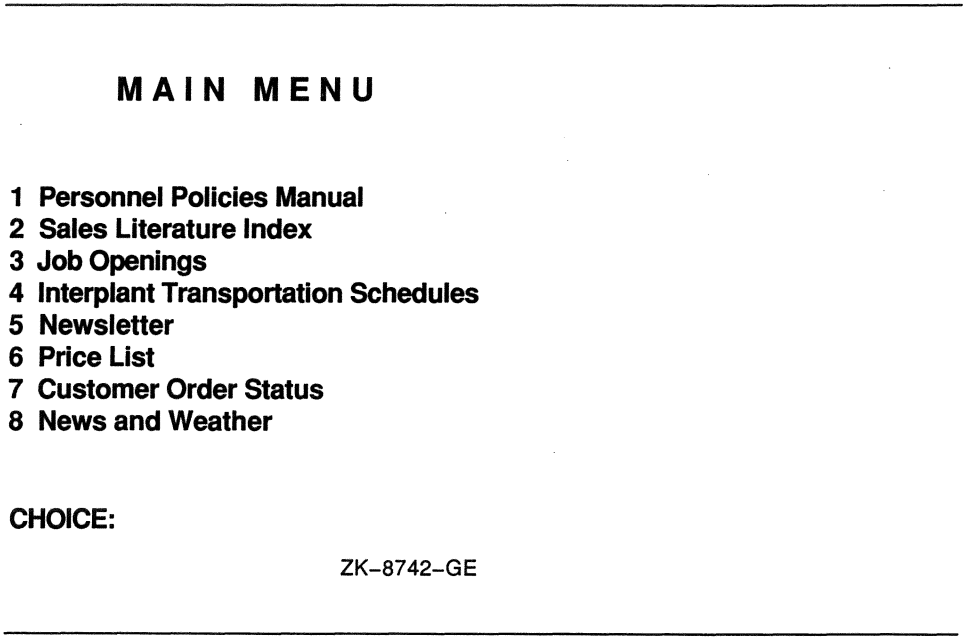
To subscribers of the VTX service, there are three basic kinds of pages:

- *Menu page.* A menu page contains a list of available choices. On VTnnn terminals, the choices are displayed on a terminal screen. A sample of such a menu is shown in Figure 1–1. The VTX subscriber makes a choice by pressing the number on the terminal keypad that corresponds to the number of the item on the menu, then pressing the RETURN key. A subscriber with a VT100 who wants to view the Personnel Policies Manual from Figure 1–1, for example, would press the 1 key and then the RETURN key.

A *list menu page* is a special type of menu page that allows subscribers to use a mouse to select menu choices. Although list menu pages are designed for the DECwindows environment, they can be used on character-cell terminals.

- *Form page.* A form page contains areas on the screen where the subscriber can type information. VTX does not process subscriber input from a form page. Form pages are used to provide subscriber information to VAS or ELK application programs. For more information on form pages, see the *VAX VTX Information Provider's Guide*, the *VAX VTX/VALU Guide to Using VAS* and the *VAX VTX/VALU Guide to Using ELK.*
- *Display page.* A display page presents information on the VTX subscriber's terminal screen but cannot accept input from the subscriber as can menu and form pages.

Figure 1–1: Sample Main Menu



A VTX page can contain as much information as will fit on a terminal screen.

Each page has page control information associated with it. *Page control information* is a record VTX keeps about each page. The page control information includes a unique page number for each page, which is used to access the record. If the infobase is to be implemented using the Update utility, the page number is assigned by the infobase designer or the information provider. If the infobase is to be implemented using the Workbench utility, the infobase designer or the information provider assigns page names, which are automatically converted to page numbers by the utility.

The page control information for each menu page also contains a list of each menu item and the number of the page to which the menu item points. Based on this information, VTX connects the menu page and the pages it points to. When a VTX subscriber selects an item from a menu, VTX finds the page by matching the page number associated with the menu item with a page number in the VTD file.

1.2.2 Server

As mentioned earlier, an infobase is all of a corporation's information that is accessible by VTX. An infobase therefore includes all the VTD and VTK files belonging to a corporation and accessible by VTX. It is probably not possible nor practical to manage an entire corporate infobase from a single central computer. Instead, VAX VTX is designed to manage the infobase in a distributed fashion. That is, portions or sections of the infobase reside on different computer nodes distributed throughout the corporation.

Each section of the infobase is maintained or managed by a VTX program called a *server*. The server is a single program (also known as a VMS process) that serves the needs of many subscribers. The server receives page requests from the subscribers, retrieves the requested page from a VTD file, and then transmits the page back to the requesting subscriber. In a sense, the server functions similarly to a restaurant waiter. If a restaurant had no waiter, patrons would crowd the kitchen, shout requests, wait for their meals, carry the meals out of the kitchen, search for tables, and generally cause chaos throughout the restaurant.

In a similar sense, if every subscriber who wanted to retrieve information from a VTX infobase started a separate VMS server process, the load on the computer would be too heavy, and the computer's response time would slow down considerably. By running a single server, VTX is able to serve many subscribers simultaneously while making efficient use of the computer's resources.

A single server manages a subset of the infobase; that is, each server serves a selected set of subscribers from a selected subset (group of VTD and VTK files) of the infobase. Several servers can, however, run on the same computer node in the same way that a restaurant usually has more than one waiter. Each waiter serves a predefined group of tables, and each VTX server manages a set of VTD and VTK files and serves a selected set of subscribers.

To distinguish the servers from each other, VTX identifies each server by a unique DECnet address, which includes a node name and an object number. By default, VTX assigns the DECnet object number *43* to the VTX server. Each additional VTX server that is started on the same node must have a different DECnet object number assigned to it by the VTX operator (see the *VAX VTX Operator's Guide*.)

1.2.2.1 Local and Remote Servers

In a distributed environment such as VTX, location is relative. That is, it does not matter in what city or on what computer node the subscriber is located in a corporation. The entire VTX infobase is accessible to the subscriber if:

- VTX is installed on the subscriber's node
- The subscriber has a VTX account, or can access VTX through a guest account
- The node is connected to the other nodes running VTX
- No security restrictions have been assigned to the VTX pages
- The infobase designer has established the necessary remote connections

Because of the rapid response of the system, it might seem to the subscriber that the entire corporate infobase resides on the subscriber's local computer node. It is up to you, the designer, to decide whether or not the subscriber needs to know the difference.

In any case, this manual and others in the VTX documentation set refer to the server and the subset of the infobase that resides on the subscriber's computer node as *local* to that subscriber. That same server and that same subset of the infobase, however, is *remote* to a subscriber who works on another computer node with another server and a different subset of the infobase. Remember the restaurant analogy. A waiter assigned to serve a selected group of tables could be considered the patrons' local waiter, while a waiter serving in another part of the restaurant would be remote to the first waiter's patrons.

It is important for infobase designers, operators, and information providers to understand the distributed nature of VTX and the concepts of local and remote, because these concepts are used throughout the design, implementation, and maintenance process.

1.2.3 Update Server

The update server is a program that functions similarly to the server except that its purpose is to allow selected information providers using the VTXUPD Utility to update selected pages from a remote node. In order for the information providers to use the update server, the VTX system manager must assign them information provider accounts using the VTX Account Control Utility (described in the *VAX VTX Operator's Guide*.) The information providers can then access the file from the VTXUPD Utility on a remote node. For more information on the update server, see the *VAX VTX Operator's Guide* and the description of the CONNECT command in Part III of the *VAX VTX Information Provider's Guide*.

The update server is optional in a VTX configuration.

1.2.4 Workbench Server

The Workbench allows information providers to maintain an infobase.

The Workbench server connects the Workbench users (information providers) with a VTX infobase. Specifically, the Workbench server makes infobase pages available for Workbench users to modify and incorporate modifications to the VTX infobase.

The Workbench server manages communications with the Workbench library to maintain the infobase. Generally, there is one Workbench library for each VTX infobase. The Workbench server also handles communications for any number of information providers as they update the same infobase from the Workbench user interface program on local or remote nodes.

For more information on the Workbench server, see the *VAX VTX Operator's Guide*.

The Workbench server is optional in a VTX configuration.

1.2.5 Terminal Control Program (TCP)

When subscribers access a VAX VTX infobase from their terminals, they are actually running the terminal control program (TCP). The *VAX VTX Subscriber's Booklet* describes how to access a VAX VTX infobase.

When a subscriber enters the VTX command at the DCL prompt, the TCP takes control of the subscriber's terminal. The terminal becomes a VTX terminal, controlled by the TCP, until the subscriber exits from VTX. While it is running, the TCP:

- Transmits subscriber requests to a VTX server
- Receives, formats, and displays the requested information at the subscriber's terminal

Because VAX VTX supports the use of more than one kind of terminal, there is a terminal-specific module (TSM) for each terminal type the TCP supports. A subscriber using a DECtalk device, for example, runs the DECtalk TSM. VTX provides a set of subscriber functions, such as BACKUP, MAIN, and HELP, that are identical across terminal types. However, the methods for using the functions vary because keyboards vary from terminal to terminal. For example, where one terminal offers the VTX BACKUP function through the PF3 key, another terminal might offer the same function through a key labeled PREV SCREEN or through a combination of keys. The TSM is responsible for interpreting VTX function requests from the subscriber's terminal, and transmitting them in a form that the server can understand.

Rather than transmit the formatted page as requested by the subscriber, the server transmits a packet of information about the requested page. The requesting TSM then uses the information to format and display the page at the subscriber's terminal. By taking the responsibility for page formatting and display from the server, the TSM allows the server to handle many infobase page requests quickly and efficiently.

When it is started, the TCP tries to connect to a specific VTX infobase server whose logical name is referenced by the logical VTX$SERVER. Depending on how VTX$SERVER was defined when VTX was installed, this connection can be to either a concentrator or a server. See the *VAX VTX Operator's Guide* for more information on how TCPs connect to servers.

1.2.6 Concentrator

A *concentrator* has two main uses in VTX:

- To control multiple terminals on a single node
- To concentrate multiple terminal control program sessions over a single DECnet link

Where the terminal control program controls a single-terminal VTX session, the concentrator program controls multiple terminals using VTX. A concentrator can be used to establish certain terminals for VTX use only. Subscribers who use VTX through a terminal controlled by a concentrator program setup this way can do nothing else from that terminal. One example is a set of terminals situated throughout an airport lobby. If a concentrator is setup to work with a LAT, subscribers can exit the VTX session, use the LAT to access other system facilities, and return to the VTX session, as needed.

The concentrator also handles DECnet communication between nodes in a distributed VTX configuration. In this capacity, the concentrator allows a subscriber's terminal control program to communicate with a remote server. A single DECnet link from the concentrator to the server on another node is much more efficient than a single DECnet link for each terminal control program.

For a more detailed discussion of possible system configurations, see the *VAX VTX Operator's Guide*.

1.2.7 VTX Utilities

A utility is a program designed to help you do a specific task or set of tasks. VTX offers the following utilities:

- Workbench
- VTXUPD
- VTXAPMS
- VTXCTL
- VTXACU
- VTXIVU

The Workbench provides two interfaces that information providers can use to build and maintain an infobase:

- WBGI—the interactive Workbench Graphical Interface

  WBGI uses VT100 line drawing capabilities to dynamically display the menu structure. If you make a change to the menu structure, the Workbench displays the change on your screen.

- WBCL—the Workbench loadfile Command Language

  The Workbench processes a loadfile that contains WBCL statements to create, modify, and delete infobase pages. The command statements can be listed in any order.

For additional information, see Part II of the *VAX VTX Information Provider's Guide*.

The VTXUPD Utility is the VTX Update Utility. Like the Workbench Utility, VTXUPD helps information providers create and maintain an infobase. See Part III of the *VAX VTX Information Provider's Guide* for information on how to use the VTXUPD Utility.

The VTXAPMS Utility is the Automatic Page Management System Utility. VTXAPMS is designed primarily to manage large quantities of rapidly changing pages by assigning numbers to pages and creating the menus that point to the pages. See Part IV of the *VAX VTX Information Provider's Guide* for information on how to use the VTXAPMS Utility.

The VTXCTL Utility is the Control Utility. The VTX operator uses this utility to manage server communications, to open the page and keyword files for subscribers to access, and to manage VAS applications. See the *VAX VTX Operator's Guide* for a description of how to use the VTXCTL Utility.

The VTXACU Utility is the Account Control Utility. The VTX operator uses this utility to manage information provider and subscriber accounts and the Workbench prefix file. See the *VAX VTX Operator's Guide* for a description of the VTXACU Utility.

The VTXIVU Utility is the Infobase Verification Utility. This utility helps you verify the integrity of the infobase. When you run VTXIVU, it generates a report of any problems it detects; for example, expired pages, pages not pointed to by other pages, or pages that point to nonexistent pages. See the *VAX VTX Operator's Guide* for a description of the VTXIVU Utility.

1.2.8 Selecting an Information Provider Tool

The Workbench, VTXUPD, and VTXAPMS are all tools that an information provider can use in creating and maintaining an infobase. Their main difference is in their degree of complexity and the required sophistication of the information provider's computer knowledge.

This manual shows how to create and maintain an infobase using the VTXUPD Utility. Because the Workbench simplifies the information provider task, many of the commands and processes presented here are not necessary if you use the Workbench (if you use the Workbench, see Chapter 5 for design guidelines). However, it is important to understand VTXUPD concepts because they can help you understand how a VTX infobase functions.

Information providers should read Part I of the *VAX VTX Information Provider's Guide* for information that can help them select the appropriate utility for their use.

1.2.9 Print Queue Services

VTX provides a capability to help you prepare the following types of files for use in a VTX infobase:

- WPS-PLUS document
- DDIF document
- Text

Information providers who use these types of documents can process these documents, creating files that can be used to update a VTD file through the VTXUPD Utility, the VTXAPMS Utility, or the Workbench Utility. See Part V of the *VAX VTX Information Provider's Guide* for more information.

1.3 Summary

- VAX VTX is a system that provides your company with the tools to distribute corporate documents and other information electronically.
- The participants include the information provider, operator, infobase designer, and subscriber.
- Information is stored in an electronic infobase.
- A VTX infobase is made up of page (VTD) and keyword (VTK) files.

- To VTX subscribers, there are three basic kinds of pages: menu pages, display pages, and form pages. Keyword files contain keywords that point to the records of these pages in the VTD files.
- Subscribers select items from menus and read display pages using either the keypad and screen environment of a video terminal or the mouse and window environment of a workstation.
- VTX finds the pages in the infobase by matching the subscriber's menu selection to a page number.
- VTX provides all the tools necessary for the design and implementation of a completely distributed infobase.

Chapter 2

Planning a VTX Infobase

A VTX infobase is made up of VTD files and VTK files. The VTD and VTK files contain the pages and keywords that are read by the VTX subscribers.

There are no rules to specify how many VTD and VTK files a VTX infobase can or should contain. There is, however, a guideline: for easy maintenance, the number and contents of the files in your infobase should reflect the logical structure of the infobase. In other words, the design of a VTX infobase depends on the needs, procedures, and limitations of your company. To illustrate, here are a few design possibilities:

- An international corporation wants an infobase that contains identical information in four languages. A logical way to design the infobase is to create four VTD files, one for each language. The responsibility for maintaining each file would belong to a different information provider. If a file is large enough, it could be maintained by a number of information providers. One information provider, for example, could be responsible for maintaining the French language version of the corporation's personnel policies, while another could maintain the French language version of the corporate sales reports.
- A small company based in a single country has an infobase of three files: one for finance, one for employee activities and company news, and a third for sales information. Depending on the size of the files and availability of personnel, all the files could be maintained by one information provider, or each file could be maintained by a different information provider.
- A company has some highly sensitive information that only selected information providers and subscribers should see. This company could have one or more high-security VTD files along with other VTD files for low-security information.

It is important to spend time in the planning process. Part of the infobase designers' job is to supply the rules and conventions for such issues as the number, contents, naming, and placement of VTD and VTK files. They must also decide such issues as the consistent appearance of the pages when displayed on the subscriber's terminal screen, page numbering conventions, and how keywords can be most effectively used. Planning helps to identify needs and establish rules.

To help you understand the planning process, Chapter 2, Chapter 3, and Chapter 4 of this manual use the example of Generic Industries, Inc. Generic Industries manufactures, sells, and distributes small office products such as erasers, paper clips, pencils, pens, and so forth. The company has administrative offices in Boston, Massachusetts, and a manufacturing facility in London, England. The company has approximately 400 employees. Some of them are sales people, some are clerical and administrative, and the rest work in manufacturing and distribution.

The company owns two VAX computers, one in Boston and the other in London. The computer in Boston is named BOSTON, and the computer in London is named LONDON. The company also owns VT100 and VT200 class terminals. Generic Industries purchased VAX VTX to help with its information distribution needs. A system manager on the company's staff installs computer software and manages VMS user accounts. The system manager installed VAX VTX on BOSTON according to the installation procedure. Generic Industries formed a team of several people who will later serve as the information providers and VTX operators. It is time for them to meet and begin planning the infobase.

The planning process can be divided generally into five steps:

1. Deciding on a design strategy
2. Establishing a page hierarchy
3. Establishing a page numbering scheme
4. Establishing a keyword strategy
5. Sketching menu and display pages

The work of Generic Industries' designated team of infobase designers is described in the following sections.

2.1 Deciding on a Strategy

The designers plan to eventually have a large VTX infobase with many subscribers in both Boston and London. For now, however, they have decided to start with a small system on BOSTON and have set the following short-term goals:

- To gain experience in designing and implementing VTX infobases
- To keep the infobase size manageable while they are in the learning stage
- To give the subscribers time to become accustomed to the VTX infobase
- To find out what information the subscribers want to get from the VTX infobase
- To give themselves time to develop screen display standards for template pages, logos, screen headings, and help pages

Knowing that VTX is ideal for information that changes often and must be widely distributed, the designers of Generic Industries' infobase are going to start with:

- Company news
- Industry news
- Product information for answering telephone queries from customers

They have no international language considerations and, as yet, no security considerations. They are therefore going to organize the infobase by subject. The infobase will contain three VTD files, one for each category of information. The files eventually will be maintained by three different information providers. They feel that such an arrangement will allow the maximum flexibility so that if their security needs change, for example, it will be easy to add a new VTD file containing high-security pages later on.

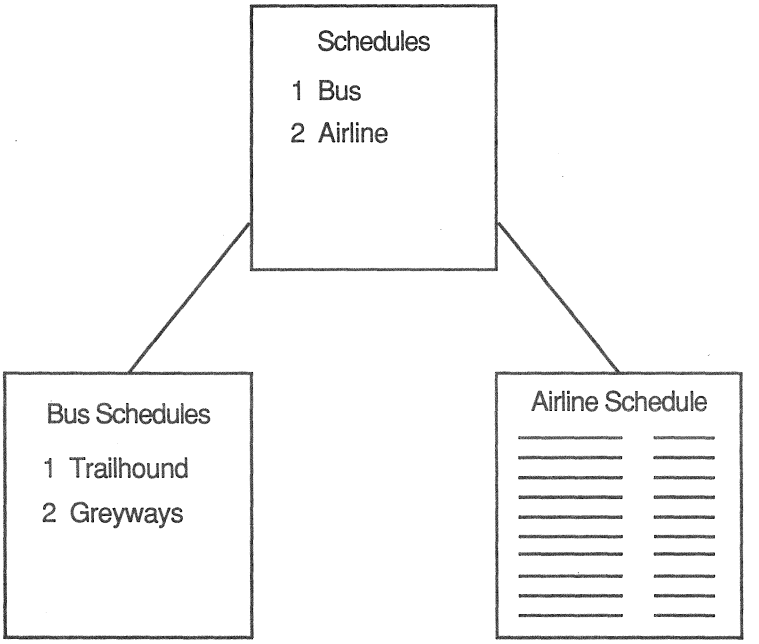
2.2 Establishing a Page Hierarchy

Their next step is to decide what items should be on each menu and what the relationship between menus and display pages will be. This is an especially important step because the menu choices point to pages, thereby providing the paths that VTX subscribers will follow through the infobase.

The pages should form a hierarchical structure, logically similar to the branches of a tree.

Just as a tree starts from a trunk, the VTX infobase starts from a main page (usually a menu). The menu choices lead to other choices just as a tree trunk branches to numerous limbs. Figure 2–1 illustrates a typical VTX menu page and the logical page structure immediately underlying the menu choices. (Notice that a menu can point to subordinate menu pages as well as to display pages.)

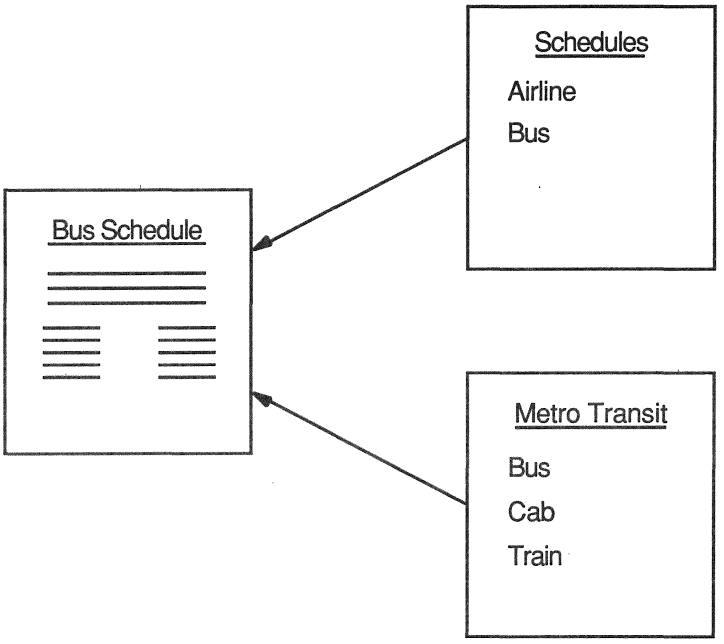
Figure 2–1: A Menu Page Points to Other Pages



Moving from general menu pages to more specific subordinate pages, VTX subscribers *navigate* through a VTX infobase retrieving the pages they want.

Menus do not have to point to subordinate pages. You can create menu pages that point to pages higher up in the page hierarchy. You can also allow situations where two or more menu pages point to the same page, as illustrated in Figure 2–2.

Figure 2–2: Menus Can Point to the Same Page



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You need to understand VTX infobase navigation in order to build an efficient VTX infobase. A good technique for deciding how to structure the infobase is to put yourself in the position of a subscriber who wants to find information quickly. That should help you build useful menu pages that form logical, efficient paths through the infobase.

Keeping the needs of the subscribers in mind, the Generic Industries designers sketch the page hierarchy (also known as a *storyboard*) for the infobase pages. The hierarchy is shown in Figure 2–3. Notice that the pages are organized by subject. The storyboard reflects the logical categories and subcategories of the three sets of information: company news, industry news, and product information. Notice also that two of the pages (labeled 4 and 5) have *continuation pages* (labeled 4.1 and 5.1). Continuation pages are used when all the information will not fit on one page.

The storyboard is not part of the VTX programs. Rather, it is a tool you can originate to help you organize and visualize the infobase. You could create an infobase without ever having gone through the storyboard process. If you use the VTXUPD Utility to create your infobase, however, *storyboarding is highly recommended* to make it easier to maintain and use your VTX infobase. You will refer to the storyboard again and again during the design and implementation process, and even afterward, when you want to add new categories to the infobase.

NOTE

If you use the Workbench Utility to create your infobase, you can do storyboarding interactively. The Workbench WBGI enables you to lay out and change the structure of the infobase as often as needed.

Figure 2–3: Page Hierarchy Sketch

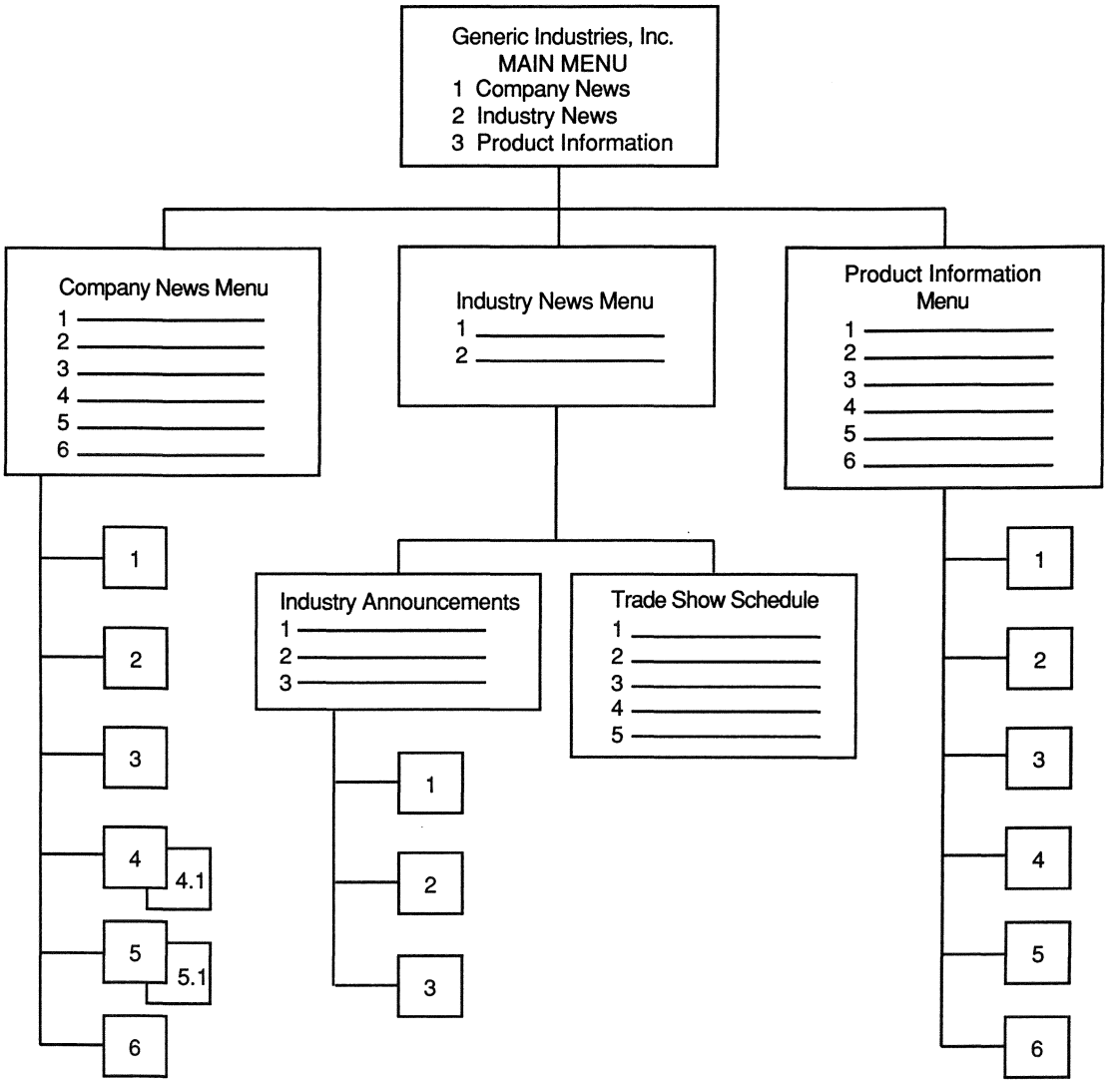

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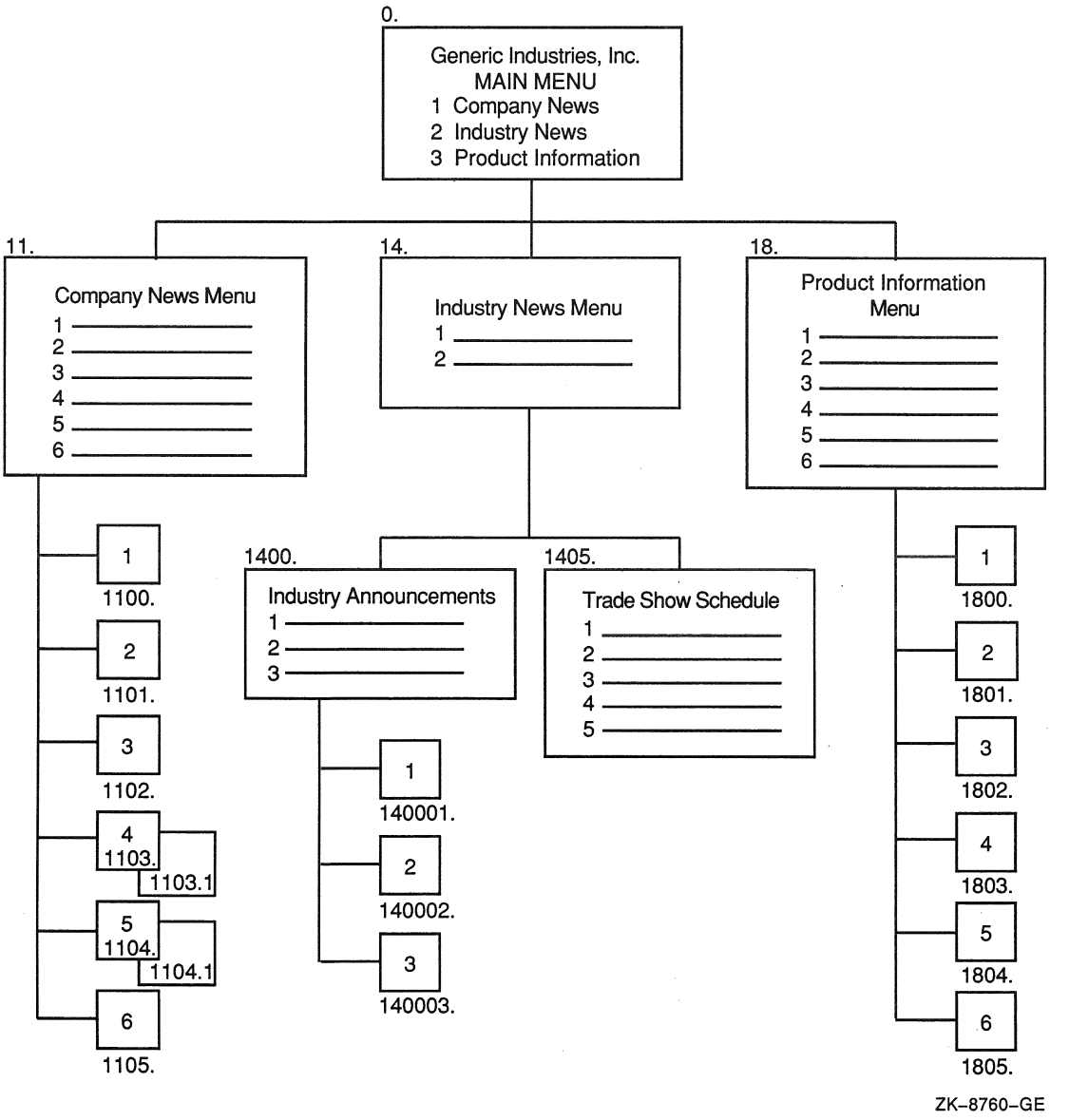
Figure 2–4: Assigning Page Numbers to the Hierarchy



2.3 Establishing a Page Numbering Scheme

After the logical structure of the infobase is designed, the next step is to decide how to number the pages. Page numbers are to VTX as a key is to a lock: a key matches only one lock, and a page number matches only one page. Therefore, page numbers *must be unique* within the section of the infobase managed by a given server.

The format of a page number is:

- A string of up to 12 digits
- A decimal point
- An optional decimal number of up to 5 places

A page number can be from 0.00000 to 999999999999.32767. The number to the left of the decimal point is the number of the first page in a set of pages that comprise a document. The number to the right of the decimal point is the number of a continuation page. (Note that the preferred way to specify page numbers is to use the decimal point. If the page is to have continuation pages, the decimal point is required.)

For example, if the first page of a document is numbered 85.00000, the second page (the first continuation page) would be 85.00001, the next page would be 85.00002, and so on, up to 85.32767 (the highest page number allowed for this document). You do not have to enter a continuation page's leading zeros; the VTXUPD Utility enters them when it stores the page. Thus, entering a page number of 85. is the same as entering 85.00000, entering 85.1 is the same as entering 85.00001, and so forth.

The page number assignments for Generic Industries' VTX infobase are shown in Figure 2–4. The drawing shows some useful numbering patterns:

- The main menu page (page number 0.) is the first level of the infobase hierarchy.
- Beginning with the second level, all pages within a category start with the same two-digit number. The page numbers in the Company News section begin with 11, those in the Industry News section begin with 14, and those in the Product Information section begin with 18.
- The numbers at the third level are two digits longer than the numbers at the second level. The numbers at the fourth level are two digits longer than the numbers at the third level.

Starting all the page numbers within a related section of the infobase with the same digits is called *prefixing*. Prefixing is an important mechanism because it allows information providers to manipulate whole groups of pages rather than one page at a time. For example, prefixing allows information providers to:

- Make available for deletion only those pages in a VTD file that begin with a specified prefix
- Copy all pages from the VTD file that begin with a specified prefix so the pages can be edited
- Change the prefix when the pages are put into or taken out of the VTD file

In other words, if during the infobase design stage you establish a page numbering pattern that includes prefixes, information providers will find infobase maintenance easier.

NOTE

If you plan to use a variety of utilities (the Workbench, VTXUPD, and/or VTXAPMS) to create and maintain your infobase, you need to establish a prefixing strategy to ensure compatibility among the different kinds of pages. See Part I of the *VAX VTX Information Provider's Guide* for suggestions and precautions to take when assigning prefixes using different utilities.

The second pattern, adding two digits at every level in the hierarchy, allows the designers to:

- Point to more than 10 pages from one menu
- Keep the prefixes intact

Look at the Industry News section (prefixed with the digits 14), for example. The Industry News menu points to two subordinate menus: Industry Announcements (page number 1400.) and Trade Show Schedule (page number 1405.). Page number 1400. points to three pages only (page numbers 140001., 140002., and 140003.).

Suppose page 1400. pointed to 11 or more pages. In the numbering scheme being used by Generic Industries, the numbers would continue 140004., 140005., and so on through 140010. In fact, page number 1400. could point to as many as 100 pages (page numbers 140000. through 140099.).

Now suppose the designers had decided on a numbering scheme that increased the number at each level by only one digit instead of two. The Industry News menu (page 14.) would probably then point to page numbers 140. (the Industry Announcements menu) and 145. (the Trade Show Schedule). Page number 140. would probably point to page numbers 1401., 1402., and 1403.

Again, suppose the designers had 11 or more pages. The numbers would continue 1404., 1405., and so on through 1409. The next number could be 1410. (but that negates the prefix 140) or 14010. The VTX utilities arrange the page numbers according to the ASCII sort sequence; that is, in *alphabetical order*, similar to the way names are alphabetized in a telephone book. For example, suppose a VTD file contains three pages numbered 85., 8510., and 1000. In the numbering scheme used by VTX, the lowest number is 1000 (not 85, as might be expected), the middle number is 85, and the highest number is 8510. This is because:

- The "8's" in 85 and 8510 have a greater value than the "1" in 1000
- The "5's" in 85 and 8510 are equal
- The "1" in 8510 has a greater value than the implied space following 85

Given this numbering scheme, then, the page number 14010. falls within the range of numbers between 14 and 149999999999. But to a novice information provider, this page number may seem to be illogically outside the numeric range of numbers.

It is often difficult for people to understand how numbers can be *alphabetized*. If information providers do not understand the page numbers but are asked to use them, confusion could result. It is therefore important to establish a page numbering pattern at the very beginning of infobase development that everyone involved in both the development and the maintenance of the infobase can understand and use.

The Workbench Utility manages page numbering tasks for you, which eliminates possible page numbering and maintenance confusion. See Chapter 5 for more information.

The actual page numbers do not matter to VTX. As long as there are no duplicates, VTX allows you to assign any number you want to any page. However, a random numbering scheme would be very difficult to control. Updating the infobase would be time consuming, and it would be almost impossible to avoid duplicating page numbers.

NOTE

Do not assign page numbers beginning with 089. Numbers prefixed with 089 are reserved for the internal page requirements of VTX.

2.4 Establishing a Keyword Strategy

The next step is to assign keywords to the pages. You do not *have* to assign keywords. However, keywords can be useful, especially if the infobase is large.

VTX subscribers can see the first keyword assigned to a page by using the REVEAL function from their terminal keypads. Instructions on using the REVEAL function and keywords are in the *VAX VTX Subscriber's Booklet*.

Some of the attributes of keywords are:

- You can assign up to 30 keywords per page.
- A keyword must begin with an alphabetical character (A-Z), so only subscribers with keyboards on their terminals can use keywords. (Subscribers with DECtalk terminals, for example, cannot use keywords.)
- A keyword can be up to 15 characters long.
- A keyword can contain spaces, but the information provider must then enclose the keyword in quotation marks when assigning it to the page.

There are three types of keyword searches:

- Duplicate keyword search
- Generic keyword search
- Context-sensitive keyword search

A *network keyword search* is one of these three types of keyword searches triggered on a remote server.

(For more information on keyword searches, see Part I of the *VAX VTX Information Provider's Guide*.)

Keyword assignments should be made with considerable care, especially in a large distributed infobase. Here are some suggestions:

- Think of assigning keywords to pages as similar to creating an index for a book. Assign a variety of words that subscribers would find easy

to use when looking for a desired page. Use nouns (that is, NEWS, SCHEDULES).

- Put the general word first in a keyword phrase—one most likely to be used during a generic search (SALES-BY-PRODUCT rather than PRODUCT-SALES).
- To make keyword searches on remote servers seem less random, consider having the same keywords on each server and triggering the connection to the remote server based on a keyword specified with the /KEYGOAL qualifier. (See Chapter 4 for more information on using the /KEYGOAL qualifier to implement keyword searches on remote servers.)

2.5 Designing Menu and Display Pages

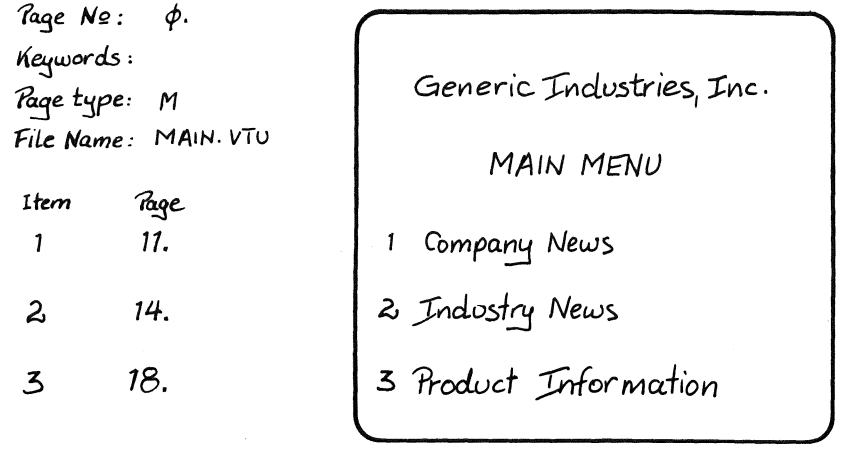
The final step in the planning process is to sketch detailed menu and display pages. The designers will refer to their storyboard and various forms of printed information (press releases, typewritten schedules, product information catalog, and so forth) as they sketch the pages.

2.5.1 Sketching the Main Menu Page

The designers' first step is to draw the Main Menu page, as shown in Figure 2–5. Notice that they indicate specific information on the sketch:

- Page number
- Keywords (if any)
- Title of the page (if using keywords)
- Page type
- Name of the file where the page information will be stored
- Number of each menu item and the number of the corresponding page in the infobase hierarchy to which the item points

Figure 2–5: Main Menu Sketch



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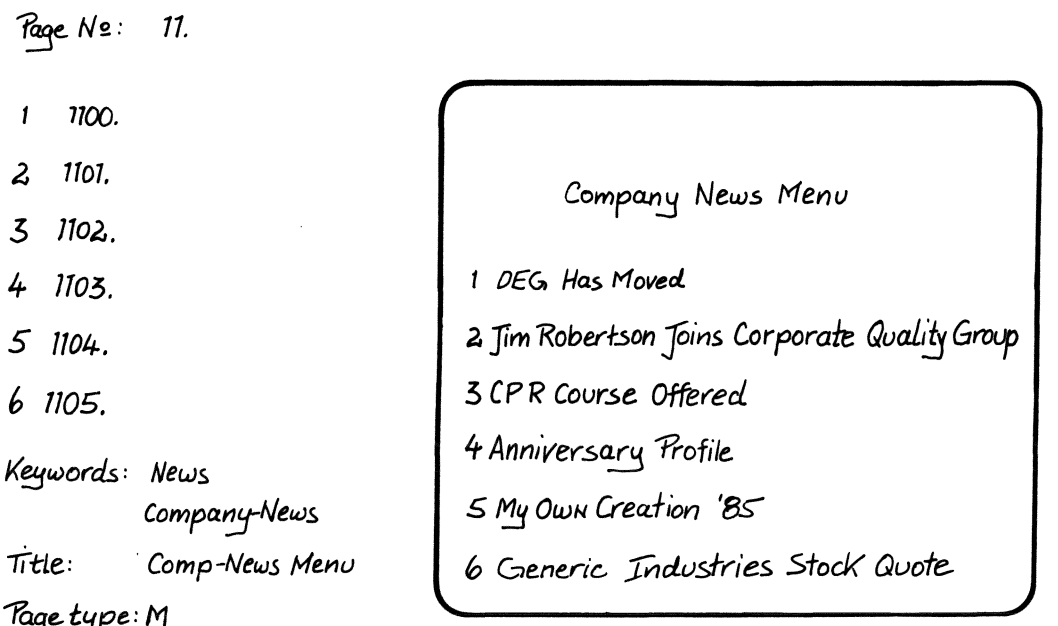
The designers sketch the Main Menu page exactly as it should appear on the subscriber's screen. They note on the sketch that the page number is 0 and that it has no keywords. (They could assign the keyword MAIN to the Main Menu page, but it is unnecessary, because VTX includes a function for the subscriber that retrieves the top-level page. The MAIN function is described in the *VAX VTX Subscriber's Booklet*.)

The designers then note on the sketch that the page is a menu page (page type M). They also assign the file name MAIN.VTU to the VTU file (VTX update file) in which they will store the page information. (See Chapter 3 for more information on VTU files.) Finally, they write the number of the page to which each item on the menu points.

Next, the designers sketch the Company News menu, shown in Figure 2–6. They assign the keywords and a title for the page and again note the number of the page to which each menu item points. They also assign the name of the VTU file (COMPNEWS.VTU) that will contain the page information.

Figure 2–6: Company News Menu Sketch



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After preparing the Main Menu page and the Company News menu, the designers prepare the sketches for the pages branching from the Company News menu. Figure 2–7 shows the text of the first news story. Notice that of the three keywords assigned, one of them is duplicated on the Company News menu (Figure 2–6). In fact, the keyword NEWS will appear on all the company news stories, as well as on the industry news stories. When the subscriber types the keyword NEWS, the titles *Company News Menu* and *DEG Has Moved* will appear on a temporary (or *dynamic*) menu along with the titles of any other pages having that keyword.

Figure 2–7: Text of First News Story

Page No: 1100.
File Name: COMPNEWS.VTU
Title: DEG Has Moved

GENERIC INDUSTRIES, INC.

DEG Has Moved

Please note that as of the 15th of November , the Domestic Erasers Group (DEG) has moved to its new quarters in Generic Park II, Boston. The group's old address and telephone numbers still apply. Until the middle of November, the group has been working in mobile homes situated on the Generic Park property while the new building was being finished.

Said Stan Jones, manager of DEG, "It will be nice to be able to hear one another talk even when it rains."

Keywords: NEWS
DEG
ERASERS

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The rest of the menu and display pages, although not shown in this chapter, are given the same attention.

The next chapter describes how the designers of Generic Industries' infobase proceed from the planning stage to putting information into the infobase and preparing the infobase for the subscribers.

2.6 Summary

Planning a VTX infobase consists of the following steps:

1. Select information suitable for electronic distribution.
2. Sketch a storyboard to define the relationship between menus and pages of text.
3. Establish the route the subscriber will follow by assigning page numbers and keywords.
4. Prepare the information by sketching the menus and display pages.

Chapter 3

Implementing a VTX Infobase

The planning is complete; the designers are ready to prepare the pages for the infobase. There are several methods they could use. The methods are described in the *VAX VTX Information Provider's Guide.*

One of the methods is to create a text file using a text editor. The text file is known as a VTX update file, or VTU file. A VTU file contains the page control information and keywords and can also contain the text for each of the pages to be put into the VTD file (if the page contains only ASCII or DEC Multinational Character Set text). The infobase designers for Generic Industries will create VTU files using a text editor.

3.1 Creating the VTU Files

Since a VTU file is a text file, it is accessible from any supported Digital text editor. The way you name VTU files, the number of VTU files you create, and whether or not you keep them after you update the VTD files is up to you. As with many other areas of infobase design, the conventions and procedures are at your discretion.

Generic Industries' infobase designers:

- Create four VTD files: one for the main menu and one for each of the three sections in the hierarchy
- Create a VTU file for each VTD file to have a one-to-one correlation between them

Using a text editor, the designers create an empty text file for the Main Menu page. They name the file MAIN.VTU. They use the sketch developed in Figure 2–5 as a guide and enter the information and the display portion of the page in the file as shown in Example 3–1.

Example 3–1: Sample VTU File—Main Menu Page

```
ADD/PAGE 0./TYPE=MENU
CHOICE 1 11.
CHOICE 2 14.
CHOICE 3 18.
---

GENERIC INDUSTRIES, INC.

Main Menu

1  Company News
2  Industry News
3  Product Information
```

The ADD/PAGE command in Example 3–1 specifies that this is a new page to be added to the VTD file. (The default is /PAGE, so you do not have to specify it.) The first command in the VTU file must begin at the top of the file in the first row, first column.

The ADD/PAGE command is followed by one space and the page number of the menu. (The designers had decided to assign the number 0. to the Main Menu page.) The /TYPE qualifier designates this as a menu page.

The word CHOICE specifies each menu item and the number of the page to which the item points. Each CHOICE command is on a separate line.

The command, the qualifiers, and the page numbers constitute the page control information. The three hyphens separate the page control information from the display text of the page. (You need the three hyphens if you use the ADD command with the /OPTIONS qualifier or have specified a menu or form page with the /TYPE qualifier.)

After typing the hyphens, the designer types the display text of the page as it will appear on the subscriber's screen. (Note that VTX uses the bottom line of the screen for messages and prompts. To avoid having VTX overwrite the text on any of your pages, leave the bottom line blank.)

After typing the text, the designer puts the form-feed character (<FF>) into the file (for example, by pressing CTRL/L from within Digital's EDT text editor). The form-feed character informs VTX that the page is complete.

To avoid possible page number and page range conflicts, if you add other pages beginning with 0 to this section of the infobase, add them to this file. For example, the VTX kit provides certain pages (the login, usage, and personal magazine form pages) whose page numbers begin with 089. You cannot change the page numbers of these form pages because internal transactions that make the forms work are based on those page numbers. (See Part III of the *VAX VTX Information Provider's Guide* for instructions

on implementing the login, usage, and personal magazine form pages.) For now, however, the menu is the only page whose page number begins with 0, so the file MAIN.VTU is complete and the designer exits from the file.

Next, the designers create a second VTU file, using the text editor again, and assign the file name COMPNEWS.VTU. The file will contain the menus and display pages of the Company News section of the infobase.

Example 3–2 shows the information the designers enter into the file. The Company News menu page follows the same conventions as the Main Menu page described previously, with one difference: the asterisks. Putting an asterisk in the place where the page number usually goes allows you to *defer* full page numbers until you are ready to update the VTD file. Remember that the designers had decided the page numbers in the Company News section would begin (or be *prefixed*) with the digits 11. In the next step, when the designers update a VTD file using this VTU file, they will instruct the VTXUPD Utility to substitute *11* every place it finds an asterisk in the VTU file. Using asterisks in the page numbers is known as *relative page numbering*.

One advantage of relative page numbering is that it allows you to move the pages from one section of the infobase to another without having to edit the page control information.

The designer assigns the title and the keywords for the page by including the options TITLE and KEYWORD (the /OPTIONS qualifier is a default on a menu page). The keywords for the Company News menu page are NEWS and COMPANY-NEWS.

In Example 3–2, the first display page is shown after the form-feed character that signals the end of the Company News menu page text. The title and keywords are assigned with the /OPTIONS qualifier.

Example 3–2: Sample VTU File—Company News Section

```
ADD/PAGE *./TYPE=MENU
CHOICE 1 *00.
CHOICE 2 *01.
CHOICE 3 *02.
CHOICE 4 *03.
CHOICE 5 *04.
CHOICE 6 *05.
TITLE "Company News Menu"
KEYWORD NEWS
KEYWORD "COMPANY-NEWS"
---

GENERIC INDUSTRIES, INC.

Company News Menu

1  DEG Has Moved
2  Jim Robertson Joins Corporate Quality Group
3  CPR Course Offered
4  Anniversary Profile
5  My Own Creation
6  Generic Industries Stock Quote

<FF>
ADD/PAGE *00./OPTIONS
TITLE "DEG Has Moved"
KEYWORD NEWS
KEYWORD DEG
KEYWORD ERASERS
---

GENERIC INDUSTRIES, INC.

DEG Has Moved

Please note that as of the 15th of November, the Domestic Erasers
Group (DEG) has moved to its new quarters in Generic Park II, Boston.
The group's old address and telephone numbers still apply.  Until the
middle of November, the group has been working in mobile homes
situated on the Generic Park property while the new building was
finished.

Said Stan Jones, manager of DEG, "It will be nice to be able to hear
one another talk even when it rains."

<FF>
```

For more information on the TITLE option, the KEYWORD option, and the ADD command and all its qualifiers, see Part III of the *VAX VTX Information Provider's Guide.*

When the designers finish creating the VTU files for their infobase, they have four VTU files:

- MAIN.VTU, containing the Main Menu

- COMPNEWS.VTU, containing the Company News section
- INDUSNEWS.VTU, containing the Industry News section
- PRODUCTS.VTU, containing the catalog pages of product information

All the pages for the entire Generic Industries' infobase are shown in Appendix A.

3.2 Constructing the Infobase

The next step is to construct the infobase using the VTU files. The infobase is made up of page (VTD) files and one or more keyword (VTK) files.

The designer uses the VTXUPD Utility to create four VTD files and a single VTK file. (Part III of the *VAX VTX Information Provider's Guide* describes how to run the VTXUPD Utility.) When activated, the VTXUPD Utility displays either the VTXUPD prompt (UPD>) or a menu, depending upon whether you choose menu or command mode. The designer chooses command mode.

The designer uses two commands to create the infobase: the CREATE command and the UPDATE command.

The CREATE command tells the VTXUPD Utility the name and type of file to create, and automatically opens the file, making it ready to accept the information from the VTU file.

The UPDATE command tells the VTXUPD Utility which VTU file to use in updating the VTD and VTK files. (See Part III of the *VAX VTX Information Provider's Guide* for more information on the UPDATE command and all its qualifiers.) At the VTXUPD prompt, the designer issues the following commands:

```
UPD> CREATE/KEYWORD VTXKEY.VTK
UPD> CREATE/PAGE MAIN.VTD/RANGE=(0,0*)
UPD> UPDATE/INPUT=MAIN.VTU/LOG
UPD> CREATE/PAGE COMPNEWS.VTD/RANGE=(11,11*)
UPD> UPDATE/INPUT=COMPNEWS.VTU/LOG/PREFIX=11
UPD> CREATE/PAGE INDUSNEWS.VTD/RANGE=(14,14*)
UPD> UPDATE/INPUT=INDUSNEWS.VTU/LOG/PREFIX=14
UPD> CREATE/PAGE PRODUCTS.VTD/RANGE=(18,18*)
UPD> UPDATE/INPUT=PRODUCTS.VTU/LOG/PREFIX=18
UPD> EXIT
```

The first CREATE command shown in the example creates and then opens a keyword file. It is not necessary to include the file type (.VTK) with the file name. If the file type is not included, the VTXUPD Utility automatically assigns the file type .VTK because of the /KEYWORD qualifier. The result is a keyword file (VTXKEY.VTK) that is open and ready for you to add

keywords. (Note that you must create the keyword file before you add keywords, because if the VTXUPD Utility does not find an open keyword file, it cannot put the keywords into it.) An opened keyword file remains open until you issue either an EXIT or a CLOSE command.

The other CREATE commands in the example create and open the four VTD files. It is not necessary to use the .VTD file type with the file name in the CREATE command. When you use the /PAGE qualifier, the utility knows this is a VTD file and automatically adds the .VTD file type if you do not. The files remain open until you issue either an EXIT or a CLOSE command.

The /RANGE qualifier specifies a range of page numbers for the file.

The UPDATE command, with the /INPUT qualifier, specifies to the VTXUPD Utility the name of the VTU file to use in updating the files. Again, it is not necessary to include the file type .VTU.

The /LOG qualifier causes VTX to display an informational message on the screen listing the page numbers of the pages that were added.

The /PREFIX qualifier causes the utility to replace every asterisk it finds in a page number in the VTU file with the value specified with the /PREFIX qualifier. So, for example, in the Company News section, every page number will be prefixed with 11. The designers choose to create a VTD file for each VTU file. They need not have. They could have created one VTD file, and then issued a series of UPDATE commands for all the VTU files. To have a one-to-one correlation between VTU and VTD files is only one way to maintain an infobase.

The EXIT command causes the utility to close the VTD files and the VTK file.

3.3 Creating a Guest Account

The next step is to create the VTX account file (VTXACF.VTA) and put a guest account into it. The purpose of the account file is to control page access by VTX subscribers. The guest account allows any subscriber to run VTX and read the pages in the infobase.

To create the account file, the VTX operator runs the VTX Account Control Utility by entering the following command:

```
$ RUN SYS$SYSTEM:VTXACU
```

The terminal displays the following prompt:

```
Do you want to create a new account file?
```

The designer enters *YES* and, after the command executes, the terminal displays the following:

```
Account file VTXACF.VTA has been created.
ACU>
```

The designer then issues the following command:

```
ACU> ADD %GUEST%
```

The ADD command adds a new account to the account file. The percent signs (%) must be included when you specify a guest account.

The guest account allows any VMS user on any node in the network to read the pages. Therefore, the infobase is not secure. Sensitive information, such as employee records, sales projections, and any other information considered company confidential, should not be placed in this infobase unless special security measures are taken (see Chapter 4.)

3.4 Establishing a Base Page

Thus far, you have seen how to:

- Create VTU files
- Create and update VTD and VTK files
- Put a guest account in the account file

The next step is to direct subscribers to a specific first page—also known as the *base page*—in the infobase. For most subscribers, the first page would be the top or main page, usually a menu, but it does not have to be. It can be any page at any level in the hierarchy. You can apply several criteria in determining a subscriber's base page. A subscriber's spoken or written language is one. If the subscriber understands only English, for example, but most of the infobase pages, including the top menu page, are in French, then the VTX subscriber's base page should be the first page in the section of the infobase that is written in English.

A base page determination file (VTXBASE.TXT) is provided with VAX VTX. It is a text file accessible with any supported Digital text editor, and it serves as a kind of intersection for directing subscriber traffic. Figure 3–1 shows a base page determination file.

Figure 3–1: Sample Base Page Determination File

```
!*************************************************************
!*         VAX VTX SAMPLE BASE PAGE DETERMINATION FILE       *
!*                                                           *
!*         Replace this file with your own entries.          *
!*                                                           *
!*         This file will map ALL incoming VTX users to      *
!*          Page Chosen    If the user's terminal is a:      *
!*          -----------    ----------------------------      *
!*          0000           DECtalk terminal                  *
!*          000            PRESTEL terminal                  *
!*          00             NAPLPS terminal                   *
!*          0              any other terminal                *
!*************************************************************
-
!
!                           Source  Source  Language              Base
! User Name                 Server  Page    Preference  Protocol  Page
!---------------------      ------  ------  ----------   ------   ------
*                           *       *       *           DECTALK  0000
*                           *       *       *           PRESTEL  000
*                           *       *       *           NAPLPS   00
*                           *       *       *           *        0
[EOB]
```

The asterisks in the base page determination file are wildcards. This means every subscriber's login attributes satisfy those categories containing asterisks.

In the last line of the file, all categories contain wildcards. This line directs every subscriber to page 0. Because VTX stops searching the file as soon as it finds a match in all categories, this wildcard line should be the last line in the file. The base page determination file cannot be considered a security measure for Generic Industries' infobase. If VTX cannot find a match for the incoming subscriber in the base page determination file, it automatically shows the subscriber page 0. (This is true even if you delete the wildcard entries in the last line.) The only way Generic Industries' designers could use the file for security would be to make sure the files do not contain a page 0. (VTX does provide several security measures; they are discussed in Chapter 4.)

The entries for DECtalk, Prestel, and NAPLPS terminals are provided with VTX. If the infobase designers had VTX subscribers with these special terminals, they would edit the file and specify the appropriate base page. Because Generic Industries does not have any of these special terminals, they can, if they choose, delete the entries.

See the *VAX VTX Operator's Guide* for a detailed description of how to use a base page determination file.

3.5 Making the New Pages Operational

Thus far, you have seen how to create the VTU files, how to create and update the VTD files and VTK file, how a guest account is added to the account file, and how to modify the base page determination file. The next step is to make the infobase operational.

The VTX operator uses a text editor to create a command file named STARTVTX.COM. This command file contains the commands (explained in the *VAX VTX Operator's Guide*) that:

- Define the server
- Start the VTX control program, VTXCTL
- Start the VTX server
- Start communications so the TCP can communicate with the server
- Open the page and keyword files
- Exit from server mode, leaving the server running
- Exit from the VTXCTL Utility

NOTE

Make sure that VTXSERVER.COM is in the SYS$LOGIN of your VTX operator's account before you run the startup command file. See the *VAX VTX Installation Guide* for information on the location of VTXSERVER.COM after the installation of VAX VTX.

The contents of the STARTVTX.COM file for Generic Industries' Boston infobase are shown in Example 3–3.

The DEFINE command is a DCL command. It creates the logical name that VTX looks for (VTX$SERVER) and assigns an equivalent value to it. In this case, it assigns the value BOSTON (the computer's name) and the DECnet object number 43, making VTX$SERVER synonymous with BOSTON::""""43="""".

Example 3–3: Sample Startup Command File

```
$DEFINE VTX$SERVER BOSTON::"""43="""
$RUN SYS$SYSTEM:VTXCTL
START SERVER
START COMM/OBJ=43
OPEN/KEYWORD [VTX]VTXKEY.VTK
OPEN/PAGE/SHARE [VTX]MAIN.VTD
OPEN/PAGE/SHARE [VTX]COMPNEWS.VTD
OPEN/PAGE/SHARE [VTX]INDUSNEWS.VTD
OPEN/PAGE/SHARE [VTX]PRODUCTS.VTD
EXIT
EXIT
```

Object number 43 is the DECnet object number set aside for VTX. VTX automatically assumes that the VTX server started with the START COMM (communication) command will be object number 43. Other servers can be started on the same node, but they must be given an object number other than 43.

The OPEN commands prepare the files so subscribers can read the information they contain.

The /KEYWORD and /PAGE qualifiers tell VTX that these are keyword or page files.

The /SHARE qualifier on the OPEN command allows the information provider to update the contents of the files at the same time they are being accessed by subscribers. Without this qualifier, the operator would have to close the file to subscriber access so that the file could be updated.

The square brackets enclose the VMS directory name, [VTX], where the page and keyword files are located.

The VTD and VTK file names are next. Note that it is not necessary to include the file type (.VTD or .VTK) when issuing an OPEN command, because the /PAGE and /KEYWORD qualifiers tell VTX these are page or keyword files.

The *VAX VTX Operator's Guide* describes all these and other qualifiers and parameters for the OPEN command.

3.6 Testing the Infobase

The final step is to test the infobase. The designers run the startup command file (STARTVTX.COM) by issuing the following command:

```
$ @STARTVTX
```

The designers test the menus and display pages to be sure that the menu selections point to the correct pages and that there are no typing errors in the information displayed on the VTX subscriber's screen.

3.7 Summary

To implement a VTX infobase:

1. Create VTU files.
2. Create VTD and VTK files.
3. Update the infobase using the VTU files.
4. Add a guest account to the account file.
5. Edit the base page determination file, if necessary, to meet the needs of your site.
6. Create the startup command file and include the OPEN commands for the VTD files.
7. Run the startup command file.
8. Test the menus and display pages.

Chapter 4

Enhancing the Infobase

Chapter 1, Chapter 2, and Chapter 3 describe how to design and implement a simple VTX infobase using the example of Generic Industries. This chapter describes ways the designers of Generic Industries' infobase can enhance the basic system.

The VTX infobase at Generic Industries needs enhancing because:

- The designers are ready to distribute the infobase to the company's London site. The DECnet link between BOSTON and LONDON has been established, and the system manager for LONDON has installed VAX VTX.
- The company bought a color graphics display terminal for its Sales Department. Sales personnel will use it to show designs of new products to customers.
- The company has decided to put some sensitive data on the system for the personnel department. The personnel department wants to be sure that only authorized subscribers will be able to see the information and that only authorized information providers will be able to maintain it.

The rest of this chapter describes how Generic Industries' infobase designers implement these enhancements.

4.1 Exchanging Data

Printed information in a corporation is generally prepared and maintained by one department at one location. The information might then be used only by the department that prepares and maintains it, or it might be distributed to a number of different departments at many different locations, with updates to the information being provided periodically by the maintaining department.

In VTX, the counterpart of the second option is a mechanism called *remote pages*. A remote page is a type of page that, rather than containing information, activates a communication link to a remote server. Remote pages allow subscribers to get information from other VTD files even though they do not have accounts on the computer where the files are stored. Usually, the VTX subscriber is unaware that a remote connection has been made.

Generic Industries' infobase designers designed a storyboard and established a VTX system on LONDON. They followed the same conventions and rules described in Chapter 1, Chapter 2, and Chapter 3. They designed and implemented a page hierarchy very similar to the one for BOSTON, except that the information stored in LONDON's VTD files is different from that stored on BOSTON. LONDON's files include information that is of specific interest to the subscribers at the London manufacturing site:

- Workload forecasting information
- Preventive maintenance schedules for equipment
- New orders
- Shipping schedules

In addition to the information stored on LONDON, the designers also want LONDON's subscribers to be able to read the Company News section of the infobase stored and maintained on BOSTON.

To allow LONDON subscribers to read the pages, the infobase designers now must:

- Identify the two servers to one another
- Decide on a network keyword strategy
- Add a remote page to one of the VTD files on LONDON

In the discussion that follows, remember that LONDON is the *local* computer with the *local* server and that BOSTON is the *remote* computer with the *remote* server. The remote server manages the target page—the Company News menu—that gives the subscribers access to the Company News section. The local server manages the remote page. The remote page, under the local server, triggers the connection to the target page under the remote server.

4.1.1 Identifying the Servers for DECnet

The designers have to identify the servers to DECnet because messages are delivered over DECnet to a named server at a specific DECnet address.

Remember the restaurant analogy. If a restaurant offers pizza as one of its menu selections, yet has the pizza prepared by the pizza shop across the street, the restaurant will have to post the pizza shop's telephone number in the kitchen. This way, whenever a patron orders pizza, the restaurant can place the order with the pizza shop. In this analogy, the restaurant is the local server, the pizza shop is the remote server, and the telephone number is the remote server's name and DECnet address.

The designers name the server on BOSTON "ADMIN", and the server on LONDON "MFG". To identify the servers, the designers edit their STARTVTX.COM file on LONDON and insert two commands between the START SERVER and START COMM commands:

```
REMOTE MFG/HERE
REMOTE ADMIN BOSTON::"43="
```

The first REMOTE command with the /HERE qualifier assigns LONDON's server the name MFG. The /HERE qualifier identifies it as LONDON's local server, the one identified by the VTX$SERVER logical assigned with the DEFINE command in the STARTVTX.COM file.

The second REMOTE command tells the LONDON server that the server on BOSTON is named ADMIN and that its DECnet address is 43; that is, the server named ADMIN is on a computer node named BOSTON at DECnet object number 43. The DECnet object number simply means the DECnet address.

4.1.2 Deciding on an Infobase Keyword Strategy

It is better to assign keywords with the entire infobase in mind, rather than simply on a server-by-server basis. This strategy helps to:

- Make the keyword search cohesive
- Make the best possible use of the computer network
- Maintain, as much as possible, the seamless appearance of the infobase

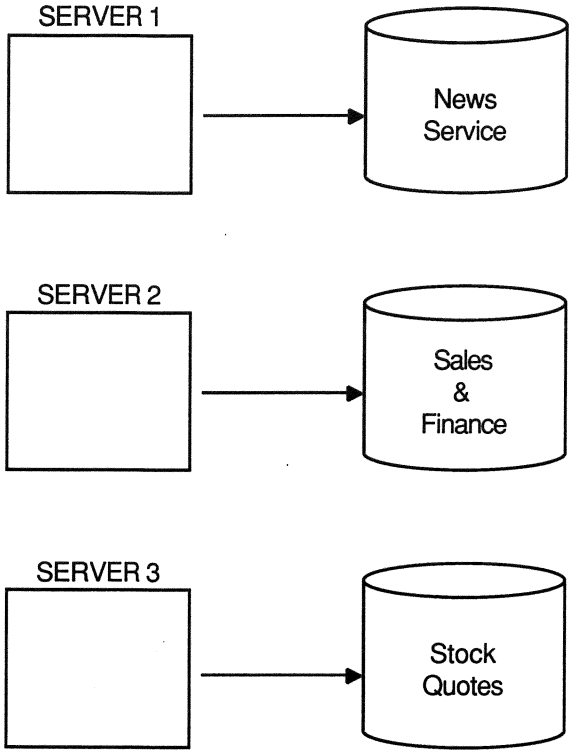
One of the ways to accomplish this is to *use the same keywords on every server in the infobase*. The VTXUPD Utility /KEYGOAL qualifier, used with the ADD/PAGE command, provides a mechanism that allows you to assign a keyword to trigger a keyword search on a remote server. (See Part III of the *VAX VTX Information Provider's Guide* for more information.) Section 4.1.3 describes how Generic Industries implemented keywords with the /KEYGOAL qualifier.

First, however, the following discussion of a hypothetical configuration using three servers will help you understand the concept behind using keywords as pointers to remote servers, and the difference it makes in the subscriber's view of keyword searches.

Figure 4–1 shows a configuration of three servers (SERVER1, SERVER2, and SERVER3).

- SERVER1 has a VTD file containing news from a news service. The keyword for the first page of the news is NEWS.
- SERVER2 has a VTD file containing sales information. The keyword for the first page of the sales information is SALES. SERVER2 also has pages of finance department information. The keyword for the first page of the financial information is FINANCE.
- SERVER3 has a VTD file containing stock quotes. The keyword for the first page of the stock market information is STOCKS.

Figure 4–1: Distributing Keywords



Keyword Assignment		Keyword Search
NEWS	--	local server
SALES	--	connect to SERVER2
FINANCE	--	connect to SERVER2
STOCKS	--	connect to SERVER3
NEWS	--	connect to SERVER1
SALES	--	local server
FINANCE	--	local server
STOCKS	--	connect to SERVER3
NEWS	--	connect to SERVER1
SALES	--	connect to SERVER2
FINANCE	--	connect to SERVER2
STOCKS	--	local server

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Notice that in addition to the keywords assigned to its own pages, each server also has other keyword assignments. Besides NEWS, for example, SERVER1 also has the keywords SALES, FINANCE, and STOCKS. Notice, too, that SERVER2 and SERVER3 have the same keywords; that is, NEWS, SALES, FINANCE, and STOCKS. Each server in this hypothetical configuration has the *same keywords*. The only difference between the keywords on each server is where they point. On SERVER1, the keyword NEWS points to

a page in a VTD file under SERVER1. The keywords SALES and FINANCE on SERVER1, however, point to SERVER2.

Because the /KEYGOAL qualifier allows keywords to point to other servers, the subscriber whose local server is SERVER1 can do a keyword search of SERVER2, for example, by simply typing either SALES or FINANCE.

The following scenario illustrates a single subscriber's keyword search through the infobase shown in Figure 4–1:

- The subscriber, whose local server is SERVER1, enters the keyword NEWS. VTX does a keyword search for NEWS on SERVER1, finds the page in the VTD file with the keyword NEWS, and sends that page to the subscriber's terminal.
- Next, the subscriber enters the keyword SALES. VTX connects to SERVER2, does a keyword search for SALES on SERVER2, finds the page in the VTD file with the local keyword SALES, and sends that page to the subscriber's terminal.
- Now, the subscriber, who is still connected to SERVER2, again enters the keyword NEWS. Because the keyword NEWS on SERVER2 points back to SERVER1, VTX breaks the connection to SERVER2 and does a keyword search of SERVER1.
- Suppose that, instead of entering NEWS, the subscriber from SERVER1 who is connected to SERVER2 enters the keyword STOCKS. Because the keyword STOCKS on SERVER2 points to SERVER3, VTX connects to SERVER3 and does a keyword search of that server.
- If, while connected to SERVER3, the subscriber types the keyword NEWS, VTX breaks the remote connections and does a keyword search of SERVER1 because the keyword NEWS under SERVER3 points to SERVER1.

In other words, by using the /KEYGOAL qualifier described in Section 4.1.3 and assigning the same keywords throughout the infobase, the designers can maintain a seamless infobase, make economical use of the network, and offer the subscribers stable keyword searches.

Assume, then, that the designers of Generic Industries' infobase want to allow subscribers at the London site to have access to the information managed by the server on BOSTON in addition to the information in the files on LONDON. Assume also that they want subscribers on LONDON to be able to access the information on BOSTON either by selecting a menu item or by typing a keyword.

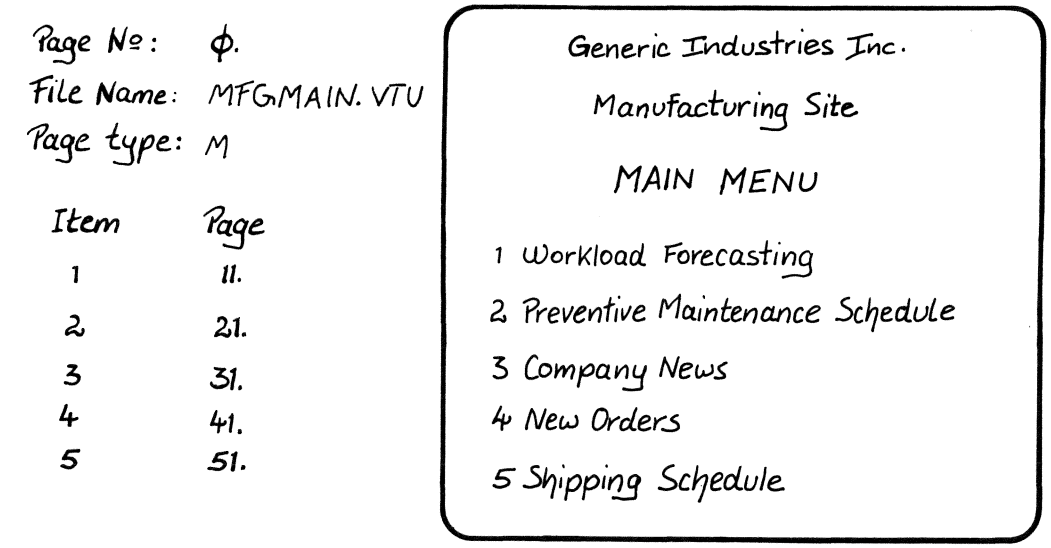
To accomplish this, the designers will assign the same keywords to both servers. To do this, they must:

- Agree on keywords for both servers
- Place remote pages with keywords pointing to the other server in each VTD file

This way, as demonstrated in Figure 4–1, subscribers get substantially the same results whenever they use a keyword, regardless of which server is the local server and which remote connections have been made.

A sketch of the Main Menu page for LONDON is shown in Figure 4–2. Notice that menu choice number 3, Company News, points to page number 31.

Figure 4–2: LONDON Main Menu Sketch



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4.1.3 Adding the Remote Page

To add the remote page to the VTD files on LONDON, use the ADD command.

The ADD command is entered as follows:

```
ADD/PAGE 31./TYPE=REMOTE=ADMIN/KEYGOAL="COMPANY-NEWS"/OPTIONS
KEYWORD NEWS
TITLE "Company News Menu"
```

The ADD command is similar to the ones shown in the Implementing a VTX Infobase Chapter of this manual, except that there is no display text following it. The remote page created by this ADD command directs VTX to the server that manages the Company News section in the same way a highway sign directs a traveler to a city. The sign does not contain the city—it points in the direction of the city. Similarly, the remote page does not contain text; rather, it points to the section of the infobase that does contain the text.

When placed into the VTD file, the ADD command adds page number 31. to MFG's VTD file with a message telling VTX that the display portion of the page is managed by a server named ADMIN. VTX knows (from the STARTVTX.COM file) that ADMIN is located at DECnet object number 43 on BOSTON.

When the subscriber selects the item on LONDON's menu that points to the Company News menu, or when the subscriber types the keyword NEWS, VTX connects to BOSTON and, because of the /KEYGOAL="COMPANY-NEWS" qualifier, looks for a page under ADMIN with the keyword COMPANY-NEWS. When it finds the page, it sends it to the subscriber's terminal.

Duplicate keyword searches work differently with keywords defined with the /KEYGOAL qualifier. If the keyword COMPANY-NEWS were duplicated on other pages under ADMIN, VTX would search through the remote server's VTK file or files and send to the subscriber the first page it found whose keyword matches the goal keyword.

The TITLE option shown with the ADD command is for MFG's use. If the keyword NEWS is duplicated on other pages under MFG, when the subscriber requests NEWS, VTX builds a dynamic menu that lists the Company News menu as one of the items. If the subscriber then selects the item that points to the Company News menu under ADMIN, VTX connects to ADMIN and sends the page whose keyword is COMPANY-NEWS to the subscriber's terminal.

4.1.4 Summary of Exchanging Data

To add a remote page:

1. Name the servers and identify their DECnet addresses.
2. Establish an infobase keyword strategy.
3. Add the remote page.

4.2 Adding Other Terminal Types

The sales department of Generic Industries purchased several NAPLPS color graphics terminals. (NAPLPS stands for North American Presentation Level Protocol Syntax. Manufacturers of NAPLPS terminals agree to abide by the technical standards prescribed by NAPLPS when making NAPLPS terminals.)

The sales department plans to use the terminals to show details and specifications of the latest models of the company's product lines to customers at trade shows.

The sales department asked the designers of Generic Industries' VTX infobase to add NAPLPS pages to the infobase on BOSTON. The designers must keep the NAPLPS pages and the pages designed for VT100 terminals separate, since VT100 terminals cannot display NAPLPS graphics.

Generic Industries' infobase pages were developed on VT100 terminals with VT100 terminal displays in mind. The designers must therefore make sure subscribers do not try to display pages not meant for their terminals. The infobase designers must:

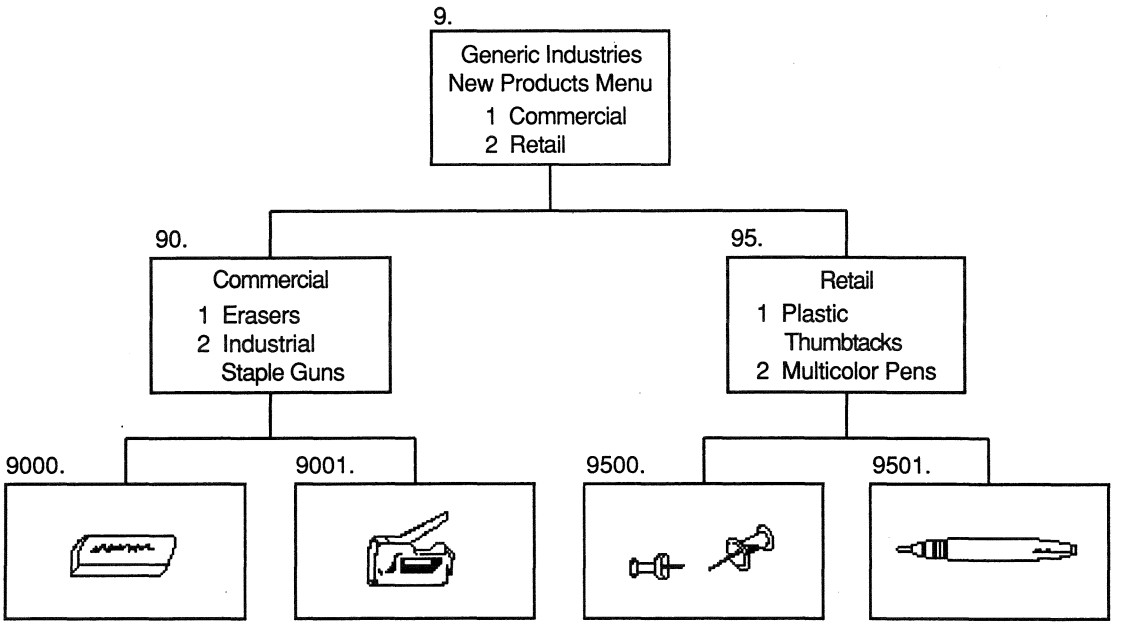
1. Sketch a menu and page hierarchy.
2. Assign a page prefix for the NAPLPS pages in the infobase.
3. Design NAPLPS pages using a NAPLPS frame creation device.
4. Decide on names for the VTU file and the VTD files.
5. Create a VTU file for adding the pages to the infobase.
6. Create a VTD file for the NAPLPS pages and update the file.
7. Put a pointer in the base page determination file for NAPLPS subscribers.
8. Test the NAPLPS pages.

The following steps describe how the designers incorporate NAPLPS pages into the VTX infobase on BOSTON. These steps could apply to any terminal type supported by VTX.

4.2.1 Designing the Menu and Page Hierarchy

The first step is to design the menu and page hierarchy and assign a range of page numbers. Figure 4–3 is a sketch of the menu and page hierarchy.

Figure 4–3: Sample Hierarchy for NAPLPS Pages



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The designers decide that all Sales Department pages should begin with 9. (They could have chosen any prefix not already assigned.) In this way, page numbers beginning with 9 will be easily recognized as Sales Department NAPLPS pages. To assign page numbers, they use the page numbering conventions described in Chapter 2.

4.2.2 Designing the NAPLPS Pages

The next step, after designing the hierarchy and assigning page numbers, is to design the NAPLPS pages. To do so, the designers must use a NAPLPS frame creation device. When the pages are complete, they must then transfer them to the VAX computer.

Each NAPLPS page must be in a separate VMS file. The designers cannot group the NAPLPS pages together in a VTU file, as they could for the other pages in the infobase, because the VTXUPD Utility cannot read NAPLPS data. They agree the file names will contain:

- The letter *S* for sales
- The page number
- The file type .NAP for NAPLPS

4.2.3 Creating a VTU File

Once all the NAPLPS pages are ready and have been assigned VMS file names, the next step is to create a VTU file for adding the pages to the infobase.

Using a VT100 terminal and a text editor, the designers create a VTU file named SALES.VTU. The designers create only one VTU file because:

- There are only a few pages
- Except for the menus, the file does not contain the actual screen images
- This infobase section, and therefore this VTU file, is expected to remain a manageable size

For each NAPLPS page, the designers enter an ADD command and page control information into the VTU file. The designers include a reference to each NAPLPS page file with the /IMAGE qualifier. VTX will look for the NAPLPS pages in the named files. The menus are ASCII text and can therefore be included in the VTU file. The contents of the SALES.VTU file are shown in Example 4–1.

Example 4–1: Sample VTU File—Adding NAPLPS Pages

```
ADD/PAGE *./TYPE=MENU
CHOICE 1 *0.
CHOICE 2 *5.
---
                    Generic Industries, Inc.

                      New Products Menu

                     1   Commercial
                     2   Retail
<FF>
ADD/PAGE *0./TYPE=MENU
CHOICE 1 *000.
CHOICE 2 *001.
---
                      Generic Industries, Inc.

                      Commercial New Products

                  1  Erasers
                  2  Industrial Staple Guns
<FF>
ADD/PAGE *000./IMAGE=S9000.NAP
ADD/PAGE *001./IMAGE=S9001.NAP
ADD/PAGE *5./TYPE=MENU
CHOICE 1 *500.
CHOICE 2 *501.
---
                         Generic Industries, Inc.

                           Retail New Products

                     1   Plastic Thumb Tacks
                     2   Multicolor Pens
<FF>
ADD/PAGE *500./IMAGE=S9500.NAP
ADD/PAGE *501./IMAGE=S9501.NAP
```

4.2.4 Creating a VTD File

The next step is to create a VTD file for the NAPLPS pages. To create the VTD file, the designers use the VTXUPD Utility to issue the following commands:

```
UPD> CREATE/PAGE SALES.VTD
UPD> UPDATE/INPUT=SALES.VTU/LOG/PREFIX=9
```

The designers must also edit the STARTVTX.COM file and include an OPEN command for the SALES.VTD file so it will be opened when the rest of the VTD files are opened for subscribers to access:

```
SRV> OPEN/PAGE/RANGE=(9,9*)/SHARE [VTX]SALES.VTD
```

4.2.5 Pointing to the NAPLPS Pages

To direct the NAPLPS terminal subscribers to the proper first page, the designers insert a pointer (the number 9) in the base page determination file on BOSTON. The file is shown in Figure 4–4. It follows the same conventions discussed earlier.

Figure 4–4: Base Page Determination File for NAPLPS

```
!*************************************************************
!*         VAX VTX SAMPLE BASE PAGE DETERMINATION FILE        *
!*                                                            *
!*         Replace this file with your own entries.           *
!*                                                            *
!*         This file will map ALL incoming VTX users to       *
!*          Page Chosen     If the user's terminal is a:      *
!*          -----------     ----------------------------      *
!*          0000            DECtalk terminal                  *
!*          000             PRESTEL terminal                  *
!*          00              NAPLPS terminal                   *
!*          0               any other terminal                *
!*************************************************************
-
!
!                          Source  Source  Language             Base
! User Name               Server  Page    Preference  Protocol Page
!---------------------    ------  ------  ----------   ------  ------
*                         *       *       *            DECTALK 0000
*                         *       *       *            PRESTEL 000
*                         *       *       *            NAPLPS  9
*                         *       *       *            *       0
[EOB]
```

4.2.6 Testing the Pages

Finally, the designers run VTX and test the pages to make sure that there were no errors.

4.2.7 Summary of Adding Other Terminal Types

To add pages with different terminal display requirements to an existing infobase, you should:

1. Design the menu and page hierarchy and number the pages.
2. Develop the page images in separate files (separate files are required if the text is of any protocol other than ASCII or DEC Multinational Character Set).
3. Create the VTU file.
4. Create and update the VTD file.
5. Point the subscribers to the proper base page.
6. Test the pages.

4.3 Securing Information

The personnel department at Generic Industries wants to put confidential employee records in the VTX infobase on node BOSTON under server ADMIN. They believe it will be easier to control who sees information stored in the VTX infobase file with proper security mechanisms than to control printed pages stored in filing cabinets.

The available security mechanisms include:

- VMS login protections: node name, username, and password

  When a user logs into a VAX/VMS system, the system checks the user's authorization and privileges.

- The VTX user account name and password

  When a subscriber runs VTX, VTX checks the account file. If the subscriber's name is not in the file and no guest account is in the account file, the subscriber must fill in a login form.

- VTX log file monitoring

  If the VTX operator issues the START LOG command at the SRV> prompt, the operator can monitor who uses VTX.

- VTX closed user group numbers

  Pages to be secured are assigned a special group number. These pages are segregated in that they can be read only by subscribers that are members of the closed user group. VTX does not allow an unauthorized subscriber to see those pages.

- Separate VTX servers

  An entire section of the infobase can be made secure simply by putting the VTD and VTK files under a separate server with no guest accounts and no connections from remote servers.

- The update server

  At VTX installation time, the system manager has the option of installing the update server by defining a logical name, VTX$UPDSRV, and assigning DECnet object number 56. The purpose of the update server is to allow selected information providers to update selected pages under remote servers. It can, however, be used as well to protect files from update by all but an authorized information provider under the local server. The system manager sets VMS file protection on the files so that they are protected from all connections except those from the update server, and the VTX operator defines the information provider's account in the account file (see the *VAX VTX Operator's Guide*). To update the file, the authorized information provider must use the CONNECT operation (see Part III of the *VAX VTX Information Provider's Guide*) and supply a username and password.

By default, all specified VMS protections are in effect when the user logs in. In addition, the infobase designers decide to use the closed user group mechanism to segregate the confidential infobase pages and the update server mechanism.

To put the new, confidential information into the VTX infobase, the designers should follow the guidelines in Chapter 2 and Chapter 3, but with the following differences:

- They agree on a closed user group numbering scheme.
- They assign the closed user group number to the confidential pages and to the accounts of the subscribers who are authorized to see the confidential pages.
- They assign an information provider to update the file.

The rest of this section describes how they implement these security measures in the VTX infobase.

4.3.1 Choosing a Numbering Strategy

The designers refer to their original page hierarchy (Figure 2–2) and decide to begin the new infobase section on page 71. They also decide that these pages will have closed user group number 1. (For more information on closed user groups, see Part III of the *VAX VTX Information Provider's Guide* and the *VAX VTX Operator's Guide*.)

4.3.2 Modifying the Main Menu Page

Their next step is to modify the Main Menu (page 0. in MAIN.VTU) to add a fourth menu choice: Employee Records. To modify the page, they:

- Remove it from the infobase with the OPEN and EXTRACT operations. The operations are explained in Part III of the *VAX VTX Information Provider's Guide*. The EXTRACT operation puts the page into a VTU file.
- Use a text editor to edit the VTU file. They add the new menu choice, Employee Records, to the display portion of the menu, and they add the menu item (4) and page number (71.) to the page control information.

4.3.3 Returning the Page to the Infobase

After editing the VTU file, the designers use the OPEN and UPDATE commands in the VTXUPD Utility to return the new version of the page to the infobase. (Examples of these commands are provided in Chapter 3. The complete syntax for both the OPEN and UPDATE commands is described in Part III of the *VAX VTX Information Provider's Guide*.)

4.3.4 Adding the Group Number

The next step is to create the VTU file for the confidential pages. The process is the same as that described in Chapter 3, except that the ADD command for each page includes the closed user group number.

The ADD command for page 71. looks like this:

```
ADD/PAGE 71./TYPE=MENU/GROUP=1
```

The number specified in the /GROUP qualifier assigns closed user group number 1 to this page. The ADD command for every page in a secure infobase section must include the /GROUP qualifier with a specified group number.

After completing the VTU file, the designers create and update the VTD file as outlined in Chapter 3.

4.3.5 Adding Accounts to the Account File

The final step in securing the infobase is to enter the names of the VTX subscribers who are members of the closed user group into the account file (VTXACF.VTA), and to enter the name of the information provider authorized to update the file.

To enter the subscriber accounts into the account file, the designers use the VTXACU Utility and issue the commands to add subscriber accounts and one information provider account as follows:

```
ACU> ADD JONES/GROUP=(1)
ACU> ADD BLACK/GROUP=(1)
ACU> ADD GREEN/GROUP=(1)
ACU> ADD/IP SMITH/READ/WRITE/PASSWORD=HIGHFI
```

The account names in this example (Jones, Black, Green, Smith) are identical to the user account names assigned by the system manager. In addition, VTX automatically assumes that BOSTON, the name of the computer, is part of the account name.

The /GROUP qualifier tells VTX that each subscriber is a member of closed user group number 1.

The information provider named Smith will have full read and write access to the file using the CONNECT operation in the VTXUPD Utility. (See Part III of the *VAX VTX Information Provider's Guide* for information on the CONNECT operation.) If the system manager has set the proper VMS file protections, and has installed the update server and assigned it the proper privileges, no other information provider will be allowed to update this file.

4.3.6 Summary of Securing Information

VTX offers several security mechanisms.

One way to secure a section of the infobase from unauthorized subscriber access is to assign matching closed user group numbers to authorized subscribers and to pages of confidential information.

The way to secure a VTD file from unauthorized updates is to add an information provider account with the proper privileges and password and to protect the file from access by all but the update server.

Chapter 5

Workbench Design Guidelines

This chapter is intended to provide the infobase designer with information that is specific to designing and implementing an infobase using the VAX VTX Workbench Utility.

5.1 Workbench Prefixes and Page Numbering

The Workbench generates 12-character VTX page numbers (for primary pages) based on the page prefix and the current value of the counter that the Workbench maintains for the prefix. When the Workbench uses a page to update the infobase, it increments the counter for the corresponding prefix and appends the number to the prefix to create the full VTX primary page number. For example, as it increments the counter for prefix 123, the Workbench would generate page numbers 123000000001, 123000000002, and 123000000003. The SHOW/PREFIX command from the VTXACU Utility shows the current value of a prefix counter.

The page number for a primary page is used in all associated continuation pages. For example, if page 123000000001 has two continuation pages, their numbers are 123000000001.1 and 123000000001.2.

The Workbench information providers (IPs) can use the GENERAL option on the PAGE INFO menu to view the VTX page number. They also can use the WORKBENCH option on the PAGE INFO menu to view or change the prefix value of a page before the page is used to update the infobase. After a page has updated the infobase, its prefix value, and its page number, cannot be changed.

5.1.1 How the Workbench Assigns Prefixes

The Workbench assigns prefixes either with or without a Workbench IP's intervention. The Workbench assigns prefixes to newly created pages according to the following procedure:

1. If a new page is a main menu or detached page (that is, it has no other pages pointing to it), the Workbench assigns the IP's default prefix, if one exists, or the system default prefix. The system default prefix is initially 99. You can reset it with the MODIFY/PREFIX command from the VTXACU Utility. Also from the VTXACU Utility, you can set a Workbench IP's default prefix with the ADD/IP=WORKBENCH or MODIFY/IP=WORKBENCH commands.
2. If the new page is a choice off another menu, the Workbench assigns it the same prefix as the menu that points to it. For example, if a choice named KEYBOARDS was added under the PRODUCT ANNOUNCEMENTS menu, and PRODUCT ANNOUNCEMENTS had been assigned prefix 21, the Workbench would assign KEYBOARDS prefix 21.
3. The Workbench IP can always override the prefix assigned to a new page by specifying a prefix with the WORKBENCH form.

5.1.2 Prefix Suggestions

A prefix value can be from 1 to 12 numeric characters in length. As a general rule, use prefixes that are three to five characters long. The shorter the prefix, the more page numbers can be generated from it. For example, the Workbench can use the prefix 123 to generate page numbers 123000000000 to 123999999999, a total of one billion page numbers. The longer prefix 123123, on the other hand, allows just six digits for page generation, a total of one million page numbers. The extreme case is a twelve-digit prefix value. Because 12 characters already equals the maximum length of a page number, the Workbench can generate only continuation pages from it.

Because the Workbench server uses prefixes to generate VTX page numbers, and because the page number assigned to a VTX page determines which infobase file the page will reside in, you should assign prefixes according to the logical division of your infobase files. In this way, you can guarantee that VTX pages of a common theme (subject, origin, security level) will be stored in one known infobase file. No matter how you organize your infobase files, your prefix scheme should reflect that organization. As previously

explained in this manual, a logically planned infobase is easier to maintain and expand.

Once you have designed your infobase and established a prefixing structure for it, you should assign prefixes to your Workbench IPs according to the sections of the infobase they are responsible for maintaining. For example, if information provider SMITH is supposed to maintain the PRODUCT INFORMATION section of the infobase, and PRODUCT INFORMATION has been given prefix 2101, you should assign at least prefix 2101 to the SMITH account. Anticipating some growth, you should also give each Workbench IP additional prefixes with which to number submenu structures. For example, you might assign prefixes 2111, 2121, 2131, and 2141 to the SMITH account. Be sure to add any assigned prefixes to the prefix file.

An infobase designer should establish the structure of an infobase and assign prefixes as soon as possible. While the Workbench's system default prefix does allow Workbench IPs to begin working with the Workbench immediately, the default prefix is intended for novice IPs who are just learning how to use the Workbench. If Workbench IPs continue to rely on the system default prefix for all pages they create, the resulting infobase file will contain many pages of different themes. If you separate pages into information files of similar themes, it will be easier for the VTX operator and infobase designer to organize and maintain.

5.1.3 Prefixes and Page Access

Prefix values have nothing to do with a Workbench IP's page access. Page access is determined by the Workbench groups to which a Workbench IP belongs. When you determine a Workbench group scheme for your Workbench IPs, you must make sure that the Workbench IPs have modify access privilege for all pages for which they are responsible. You might also want to give them read access to pages with other group codes so that they can use the Workbench to see their pages in the context of the entire infobase.

Use the VTXACU Utility to grant Workbench IPs access to Workbench pages. Use the /READ_GROUP and /MODIFY_GROUP qualifiers on the ADD/IP=WORKBENCH and MODIFY/IP=WORKBENCH commands.

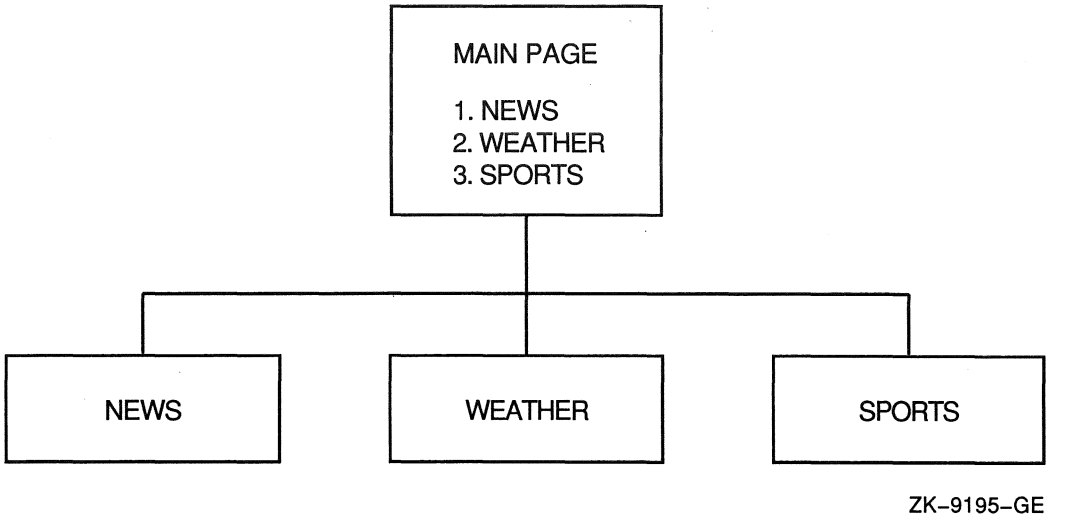
5.2 Infobase Design Walkthrough

The remainder of this chapter describes a simple example of how you might design an infobase whose pages would be created and maintained by the Workbench.

5.2.1 Organize by Common Theme

The sample infobase can be divided into three subjects: NEWS, WEATHER, and SPORTS. Each subject will have its own infobase page file. In addition, there will be a main menu page to point subscribers to the various subject offerings. The main menu page will also have its own page file. The resulting structure of the infobase is illustrated by Figure 5–1.

Figure 5–1: General Infobase Organization



The establishment of a page file for each subject offers a number of advantages:

- It allows for orderly, modular growth of the infobase.
- It helps the infobase designer and VTX operator understand and maintain the infobase easily.
- It helps the VTX server search for pages efficiently.

5.2.2 Create Infobase Section Files

Use the VTXUPD Utility to create infobase page and keyword files for these subjects as follows:

Infobase File	Range
MAIN.VTD	5,5*
MAINKEY.VTK	5,5*
NEWS.VTD	6,7*
NEWSKEY.VTK	6,7*
WEATHER.VTD	4,4*
WEATHERKEY.VTK	4,4*
SPORTS.VTD	3,3*
SPORTSKEY.VTK	3,3*

Example 5–1 shows the commands needed to create these infobase files.

Example 5–1: Creating Infobase Files

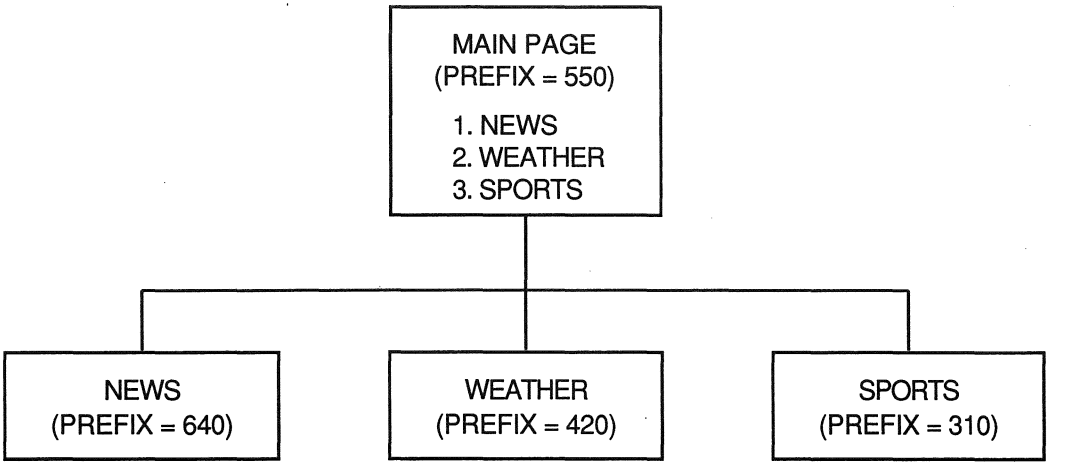
```
$ RUN SYS$SYSTEM:VTXUPD

UPD> CREATE/PAGE/RANGE=(5,5*) MAIN.VTD
UPD> CREATE/KEYWORD/RANGE=(5,5*) MAINKEY.VTK
UPD> CREATE/PAGE/RANGE=(6,7*) NEWS.VTD
UPD> CREATE/KEYWORD/RANGE=(6,7*) NEWSKEY.VTK
UPD> CREATE/PAGE/RANGE=(4,4*) WEATHER.VTD
UPD> CREATE/KEYWORD/RANGE=(4,4*) WEATHERKEY.VTK
UPD> CREATE/PAGE/RANGE=(3,3*) SPORTS.VTD
UPD> CREATE/KEYWORD/RANGE=(3,3*) SPORTSKEY.VTK
UPD> EXIT
```

5.2.3 Assign Prefixes to Structure

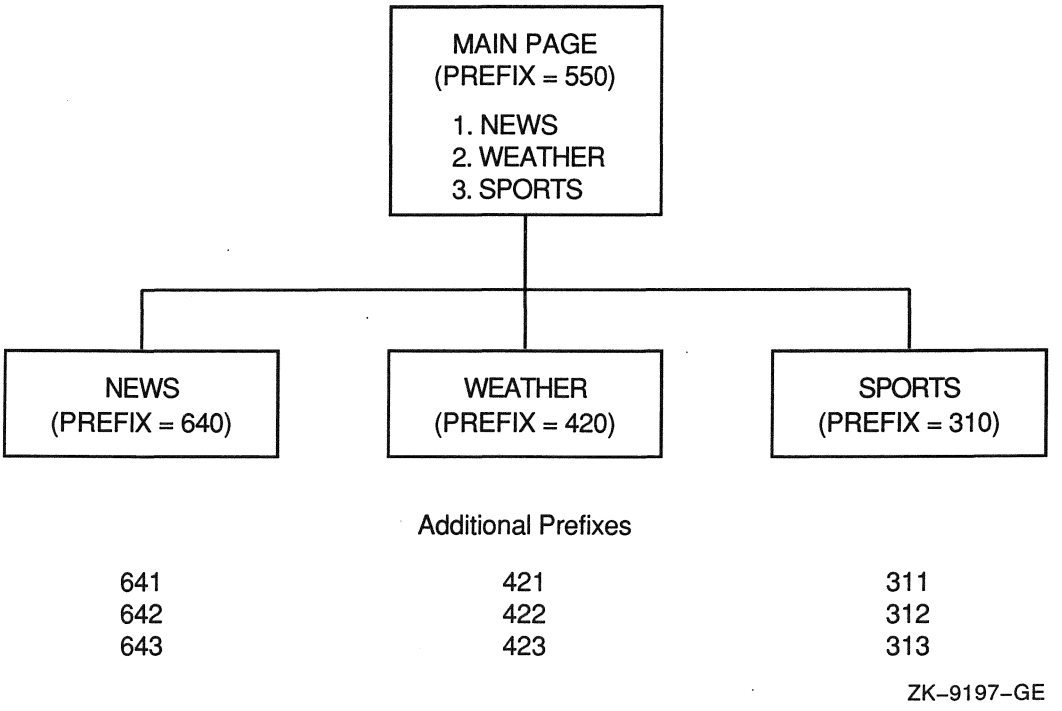
Once the topics of the infobase are established, they need prefixes to distinguish one from another. Figure 5–2 illustrates a high-level prefix scheme for the sample infobase.

Figure 5–2: High-Level Prefix Scheme



Anticipating that there will probably be submenus created from the NEWS, WEATHER, and SPORTS menus, you should determine which additional prefixes should be assigned for each category. Figure 5–3 illustrates what the more detailed prefix scheme might look like.

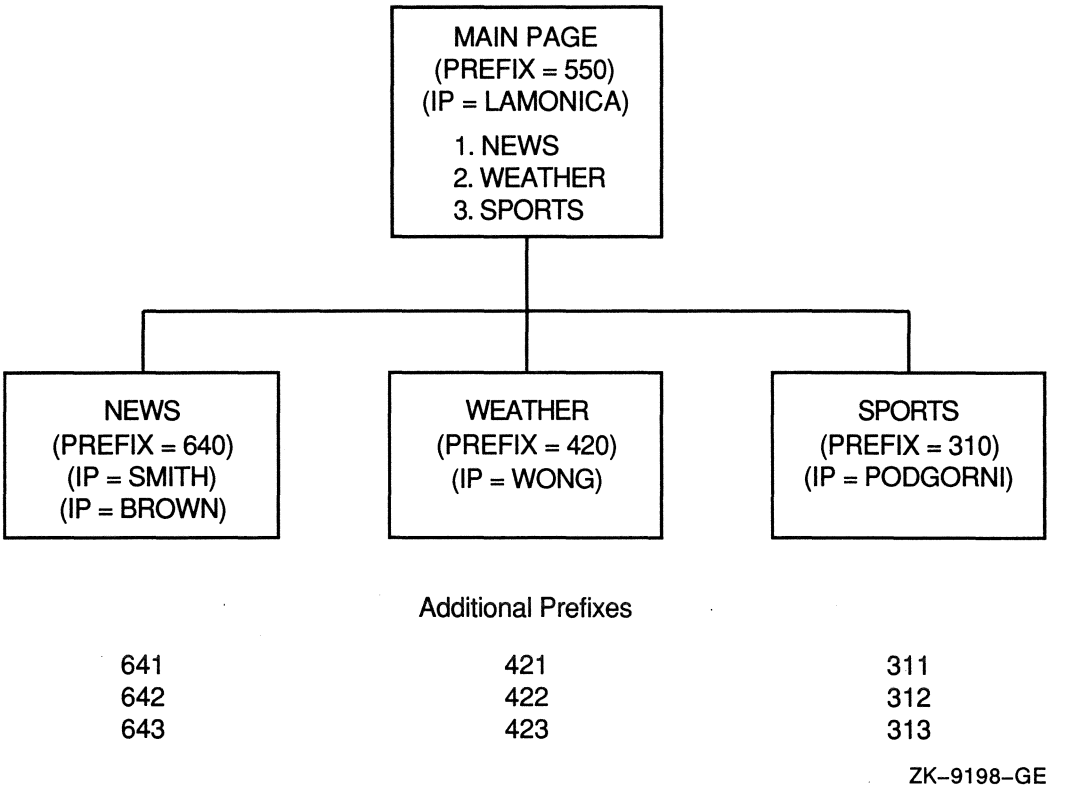
Figure 5–3: Detailed Prefix Scheme



5.2.4 Match Workbench IPs with Subjects and Prefixes

The next step is to determine who will maintain each section of the infobase. Figure 5–4 represents the assignment of Workbench IPs to sections of the infobase.

Figure 5–4: Workbench IPs Matched with Infobase Sections



Chances are, LaMonica is the infobase designer and has other duties besides maintaining a single page. The NEWS section promises to be the largest or the most frequently updated, so two IPs, Smith and Brown, are assigned to that section.

5.2.5 Determine a Group Code Strategy

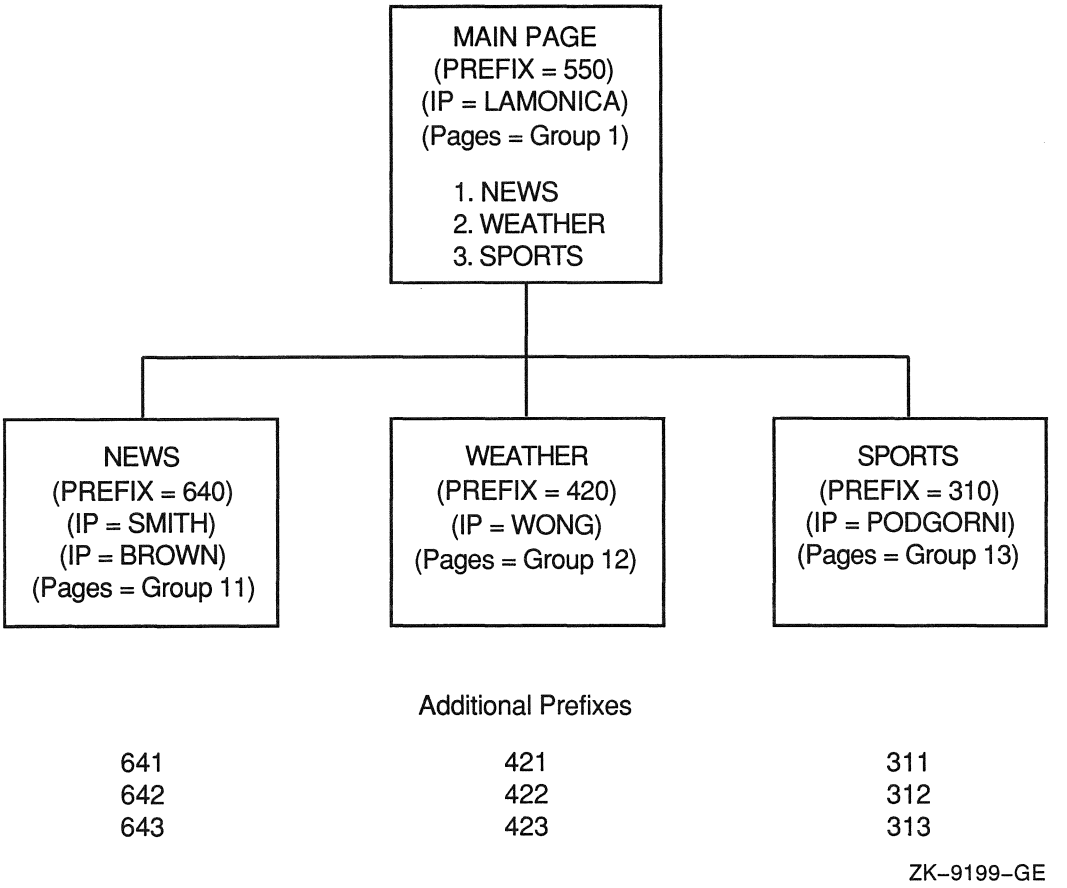
A Workbench group code is the mechanism VTX gives you to restrict Workbench IP access to pages. Workbench IPs can belong to one or more read groups and one or more modify groups. Belonging to a read group means that a Workbench IP can read all pages that have been assigned that group's code. Similarly, belonging to a modify group means that the

Workbench IP can read and modify all pages that have been assigned that group's code. Workbench IPs must have modify access to the pages that they are responsible for maintaining. You might also want to give them read access to other pages in the infobase. Figure 5–5 represents the Workbench group codes that will be assigned to the pages in each section of the infobase.

NOTE

Workbench group codes are entirely unrelated to the VTX closed user group codes used to control subscriber access to infobase pages. Workbench group codes control information provider access to infobase pages.

Figure 5–5: Workbench Group Codes Assigned



Based on the preceding infobase design work, the VTX operator can now create the necessary Workbench IP accounts and the Workbench prefixes. The LAMONICA account will have read and modify access to all sections of the infobase, and consequently anyone trying to use that account will have to enter a password. All other Workbench IPs will have modify access to their own sections and read access to the other sections. No password will be required for the other accounts.

Example 5–2 shows how the Workbench IP accounts and the Workbench prefixes are created from the VTXACU Utility.

Example 5–2: Sample Commands for Establishing Prefix Strategy

```
$ RUN SYS$SYSTEM VTXACU
ACU> ADD/IP=WORKBENCH LAMONICA/PASS=EASY2TYPE/READ_GROUP=(1,11,12,13)-
_ACU>/MODIFY_GROUP=(1,11,12,13)/DEFPREFIX=550
Account successfully added

ACU> ADD/IP=WORKBENCH SMITH/READ_GROUP=(1,11,12,13)/MODIFY_GROUP=(11)-
_ACU>/DEFPREFIX=640/ALTPREFIX=(641,642,643)
Account successfully added

ACU> ADD/IP=WORKBENCH BROWN/READ_GROUP=(1,11,12,13)/MODIFY_GROUP=(11)-
_ACU>/DEFPREFIX=640/ALTPREFIX=(641,642,643)
Account successfully added

ACU> ADD/IP=WORKBENCH WONG/READ_GROUP=(1,11,12,13)/MODIFY_GROUP=(12)-
_ACU>/DEFPREFIX=420/ALTPREFIX=(421,422,423)
Account successfully added

ACU> ADD/IP=WORKBENCH PODGORNI/READ_GROUP=(1,11,12,13)/MODIFY_GROUP=(13)-
_ACU>/DEFPREFIX=310/ALTPREFIX=(311,312,313)
Account successfully added

ACU> OPEN/PREFIX
ACU> ADD/PREFIX 550
ACU> ADD/PREFIX 640
ACU> ADD/PREFIX 641
ACU> ADD/PREFIX 642
ACU> ADD/PREFIX 643
ACU> ADD/PREFIX 420
ACU> ADD/PREFIX 421
ACU> ADD/PREFIX 422
ACU> ADD/PREFIX 423
ACU> ADD/PREFIX 310
ACU> ADD/PREFIX 311
ACU> ADD/PREFIX 312
ACU> ADD/PREFIX 313
ACU> CLOSE/PREFIX
ACU> EXIT
```

5.3 Coexistence of Infobase Pages

If you want to use a variety of IP tools to maintain your infobase files, you should consider the following suggestions and precautions:

- If you plan to use the Workbench Utility, then you should develop a prefix scheme and reserve every prefix that you have used or plan to use with a utility other than the Workbench Utility.

If you plan to use certain prefixes for all pages you create through the VTXUPD Utility, you should add those prefixes to the Workbench prefix file, using the /RESERVE qualifier on the ADD/PREFIX command in the VTXACU Utility. (See the *VAX VTX Operator's Guide* for more information.) The /RESERVE qualifier specifies that the prefix is not available to Workbench IPs. For example, if you have infobase pages created with the VTXUPD Utility and numbered with prefixes 123, 456, and 789, you should add prefixes 123, 456, and 789 (with the /RESERVE qualifier) to the Workbench prefix file. The Workbench cannot use reserved prefixes. If it could, the Workbench might generate page numbers that could be duplicated, and thus overwritten, by VTXUPD or VTXAPMS.

- If, for some reason, reserving prefixes is not a satisfactory solution, you might consider starting a new server for the Workbench portion of your infobase and using the original server for the non-Workbench portion of the infobase. (See the *VAX VTX Operator's Guide* for information about starting a VTX server.)

  One of the servers can be the local server, and the other a remote server. In this way, pages with duplicate or potentially duplicate page numbers can coexist in the same distributed infobase.

- An IP account is distinct from a Workbench IP account. If you want to let a person maintain pages using both the Workbench and other utilities, you must give the person two accounts in the account file: an IP account (with the ADD/IP command) and a Workbench IP account (with the ADD/IP=WORKBENCH command). See the *VAX VTX Operator's Guide* for more information about adding accounts to the account file.

  Note that Workbench group codes, as designated by the /READ_GROUP and /MODIFY_GROUP qualifiers (with the ADD and MODIFY commands in the VTXACU Utility), determine Workbench IP access to Workbench pages, not subscriber access to VTX infobase pages.

- Do not use the Workbench to work on pages that were created and put in an infobase from the VTXUPD or VTXAPMS Utilities. Conversely, do not use VTXUPD or VTXAPMS to maintain pages that were created and added to an infobase from the Workbench. Converting existing pages and infobases to the Workbench format is described in the following sections.

- If you want to use a Workbench-created page as a base page, remember that you must find the page number that the Workbench assigned to the page. Use the LOCATE option to retrieve the page, then the GENERAL option from the PAGE INFO menu to find its page number.

Once you know the page's number, you can specify it as a base page in the VTXBASE.TXT file.

5.4 Converting Existing Pages to Workbench Format

The Workbench Utility cannot be used to maintain infobase pages that were created by the VTXUPD or VTXAPMS Utilities. If you want to modify an existing page (a page created outside of the Workbench) to be compatible with the Workbench, you must convert it to Workbench format following the steps listed in this section.

If you want to convert an infobase, you can do it following the steps in the next section.

NOTE

Conversion is *not* required. Pages created with the VTXUPD, VTXAPMS, and Workbench Utilities can coexist in a VTX infobase.

To convert an existing page to Workbench format:

1. Run the VTXUPD Utility and extract the page from the infobase. The extract operation creates a VTU file that you can edit. You can extract individual pages or ranges of pages. However, you must still prepare each page individually for use with the Workbench. To extract a primary page and its continuation pages, use the EXTRACT/CONTINUATION command from VTXUPD.
2. Delete the page from the infobase after you extract it to a VTU file.
3. Print a copy of the VTU file for future reference.
4. Edit the VTU file. Delete everything but the display portion of the page. Remember the name of the VTU file. This becomes the image file for the page.
5. Run the Workbench Utility graphical interface (WBGI) and create the new page in the location of your choice.
6. From the PAGE INFO option, you can enter the appropriate page control information for the new page. Refer to the printed copy of the original VTU file for control information such as keywords, title string, help page, and so on. Remember that the page number is no longer applicable.
7. From the PAGE TEXT menu, choose the IMAGE FILE option and specify the name of the image file that you created from the VTU file.

8. Use the page to update the infobase.
9. Use the LOCATE option to retrieve the page after it has been used to update the infobase. Then use the GENERAL option on the PAGE INFO menu to find its new page number.
10. Use this page number to modify any non-Workbench pages that point to the page.

NOTE

If you modify a page for use with the Workbench, you remove its original page number. Any infobase pages that pointed to the original will no longer point to the new version when you put it back in the infobase.

5.5 Converting an Existing VTX Infobase to Workbench Format

The easiest way to begin the conversion to Workbench format is to start using a new VTX server for the infobase pages maintained by the Workbench Utility. Continue to use your existing VTX servers for your non-Workbench pages. As you begin to convert the existing infobase pages into Workbench format, you can use VTX remote pages to keep the Workbench and non-Workbench portions of your infobase connected.

For example, consider a simple existing infobase structure that is accessed by one VTX server. There is one Main Menu page with three choices. The choice pages are major sections of the infobase, containing NEWS, SPORTS, and WEATHER stories, respectively.

To convert the NEWS section of this infobase so you can maintain it using the Workbench Utility, follow these steps:

1. Convert the VTX page that is displayed when a subscriber selects the NEWS choice from the Main Menu page. Suppose the VTX page number of the NEWS page is 51. Complete the 10 conversion steps in the previous section.
2. Make sure the Workbench page you created still points to the proper choice pages.

If you do not want to convert all the news-related pages in one session, use the Workbench graphical interface (WBGI), as follows, to create some remote pages to point back to the original choice pages in the non-Workbench portion of the infobase:

- Use the LOCATE option to retrieve the newly created page.
- Use the ADD CHOICE option to add one choice to the page for each choice that exists on the previous page.
- Use the PAGE INFO option to make each page a remote page. The remote name you specify for these remote pages must be defined on the VTX server that accesses the Workbench-maintained infobase files.
- Use the printed copy of the VTU file you saved to determine the page number for each choice on the NEWS menu.
- Specify the correct page number for each remote page.

3. Make sure that you can access the converted page. Using the VTXUPD Utility:
   - Extract the original, non-Workbench NEWS page (page number 51), and convert it to a remote page.
   - Specify the page number assigned to the new page by the Workbench (990000000001) as the remote page number.
   - Define the remote name you specified for the page to the original VTX server.

When a subscriber accesses the NEWS choice from the Main Menu, a connection is made to the remote VTX server which accesses the Workbench-maintained page for NEWS. If a choice is made from the NEWS menu, it will lead back to the NEWS menu choices on the original server.

You can repeat this process as required to convert more and more pages into Workbench format. You can convert one page at a time, or a large number of pages at a time, and you can make the conversion at your convenience. In this example, pages likely to be converted at the next opportunity might be the NEWS choice pages themselves, or the Main Menu page and the SPORTS and WEATHER pages.

While this process seems complex, it will actually take a very short period of time. As you become familiar with the steps involved, you will be able to convert a large number of pages in a very short time period.

Appendix A

Generic Industries' VTU Files

This appendix contains copies of the contents of the Generic Industries' VTU files.

```
<FF>
ADD/PAGE 0./TYPE=MENU
CHOICE 1 11.
CHOICE 2 14.
CHOICE 3 18.
---


GENERIC INDUSTRIES, INC.

Main Menu

1  Company News
2  Industry News
3  Product Information

<FF>
ADD/PAGE *./TYPE=MENU
CHOICE 1 *00.
CHOICE 2 *01.
CHOICE 3 *02.
CHOICE 4 *03.
CHOICE 5 *04.
CHOICE 6 *05.
TITLE "Company News Menu"
KEYWORD NEWS
KEYWORD "COMPANY-NEWS"
---

GENERIC INDUSTRIES, INC.

Company News Menu
```

```
1  DEG Has Moved
2  Jim Robertson Joins Corporate Quality Group
3  CPR Course Offered
4  Anniversary Profile
5  My Own Creation
6  Generic Industries Stock Quote

<FF>
ADD/PAGE *00./OPTIONS
TITLE "DEG Has Moved"
KEYWORD NEWS
KEYWORD DEG
KEYWORD ERASERS
---

GENERIC INDUSTRIES, INC.

DEG Has Moved

Please note that as of the 15th of November, the Domestic Erasers
Group (DEG) has moved to its new quarters in Generic Park II, Boston.
The group's old address and telephone numbers still apply.  Until
mid-November, the group has been working in mobile homes situated on
the Generic Park property while the new building was finished.

Said Stan Jones, manager of DEG, "It will be nice to be able to hear
one another even when it rains."

<FF>
ADD/PAGE *01./OPTIONS
KEYWORD NEWS
TITLE "Jim Robertson Joins Corporate Quality Group"
---

GENERIC INDUSTRIES, INC.

Jim Robertson Joins Corporate Quality Group

Jim Robertson has recently joined the Corporate Quality Group as a
member of the newly formed Customer Satisfaction Group, reporting to
Curley Wilson, manager, Corporate Quality.

In his new job, Jim will work on a task force during the course of
the next two years to "establish Generic as the number one company in
customer satisfaction."

Jim has spent the last 10 years working for Generic in a
variety of key roles, including business manager, operations
manager, and plant manager for the past three years.

He holds a B.S. in industrial engineering from the General
Institute of Technology (GIT).

<FF>
ADD/PAGE *02./OPTIONS
KEYWORD NEWS
KEYWORD CPR
TITLE "CPR Course Offered"
---
```

```
GENERIC INDUSTRIES, INC.

CPR Course Offered

A CPR (cardiopulmonary resuscitation) course will be offered to
Generic employees during the months of November and December.  The
course comprises five classes, which will meet on the
following dates: November 20, 27, December 6, 13, and 20.  The
sessions will be held in the Elderberry Room from 5:30
to 7:30 p.m.

This course will be limited to 15 people.  Employees interested
in participating should contact Dana Bancock in Personnel or
Lillian Marcit in Health Services.

<FF>
ADD/PAGE *03./OPTIONS
KEYWORD NEWS
TITLE "Anniversary Profile"
---

GENERIC INDUSTRIES, INC.

Anniversary Profile

Wendell Shipherd

Office Systems Documentation

Wendell Shipherd is a principal software writer with
the Office Systems Documentation Group in Chesterland, reporting
to Petronilla Devis.  Wendell is currently writing user documentation
for Electric Thumbtack, Generic's automated posting service.

Wendell received his B.A. in English from Spit Brook University
and his M.S. in technical communication from the General Institute
of Technology (GIT).

<FF>
ADD/PAGE *03.1

Before coming to Generic Industries, Wendell wrote and managed
production of system manuals for military electronics,
environmental impact statements for highway and stadium construction
projects, reports detailing power plant maintenance and fueling
procedures during scheduled outages, and documentation for a
successful deep-sea oil production system.

For relaxation, Wendell enjoys activities with his wife and three
children, studying and practicing martial arts, reading almost every-
thing, and writing nonfiction and fiction.

<FF>
ADD/PAGE *04./OPTIONS
KEYWORD NEWS
KEYWORD ART
KEYWORD CONTEST
KEYWORD "COMPANY-CONTEST"
KEYWORD "ART-CONTEST"
TITLE "My Own Creation"
---
```

```
GENERIC INDUSTRIES, INC.

My Own Creation

Employees interested in displaying their creative talents are invited
to register and submit their creations to "My Own Creation," Generic's
in-house art show.  The exhibit will be held in the cafeteria,
January 1-7.

Each year, Personnel sponsors the festivity to exhibit the many
and unique talents of Generic's employees.  Works of art submitted in
past years included paintings, etchings, quilting, fabric arts, wire art,
photography, and a wide variety of other original crafts.

Winning entries from Generic will be displayed at the State Exhibition
in Boston, along with winning entries from other participating businesses.

Employees may submit up to three original works in any medium, and must
register their entries with the Personnel Department.
<FF>
ADD/PAGE *04.1


Registration forms must be completed and returned by the registration
deadline, December 31.

Employees who would like to help with the exhibit, or those who
desire additional information about the festivities, may contact Harvey
Molesworth in the Personnel Department.
<FF>
ADD/PAGE *05./OPTIONS
TITLE "Stock Quotes"
KEYWORD STOCKS
KEYWORD NEWS
---

GENERIC INDUSTRIES, INC.

 Stock Quote

6-JUL-89          6-JUL-89          7-JUL-89
Thursday's        Thursday's        Friday's
Opening Price     Closing Price     Opening Price

76                78 1/4            78 3/8
<FF>
ADD/PAGE 14./TYPE=MENU
CHOICE 1 1400.
CHOICE 2 1405.
---

GENERIC INDUSTRIES, INC.

Industry News Menu

1  Industry Announcements
2  Trade Show Schedule

<FF>

ADD/PAGE 1400./TYPE=MENU
CHOICE 1 140001.
CHOICE 2 140002.
CHOICE 3 140003.
```

GENERIC INDUSTRIES, INC.

Industry Announcements

1 Able Manufacturing Announces Price Cuts
2 Sharp Closes Uniontown Facility
3 Percy Pen Pencil to Service Massachusetts from Pembroke Headquarters

<FF>
ADD/PAGE 140001.

GENERIC INDUSTRIES, INC.

Able Manufacturing Announces Price Cuts

Winthrop Boyle, President of Able Manufacturing in Stamford, Connecticut, yesterday announced a series of price reductions in Able's metal staple and thumbtack lines. At $0.50 per box, Able's Staples will be competitive with Generic's, but at $0.75 per box, Able's Thumbtacks will continue to suffer a considerable price disadvantage.
<FF>
ADD/PAGE 140002.

GENERIC INDUSTRIES, INC.

Sharp Closes Uniontown Facilities

Sharp Industries of Pittsburgh, manufacturers of eraser tips and metal clips for ball point pens, announced the closure of its Uniontown facility, effective January 1. "The Uniontown plant has become an industrial antique," declared Melvin Falkowski, Sharp's president, at a stockholder's meeting last Tuesday. Sharp will consolidate operations at its recently constructed Clairton facility. Sharp has offered to relocate all 40 employees affected by the Uniontown shutdown.
<FF>
ADD/PAGE 140003.

GENERIC INDUSTRIES, INC.

Percy Pen and Pencil to Service Massachusetts from Pembroke Headquarters

Percy Pen and Pencil of Pembroke, Pennsylvania, announced last week that it will no longer use distributors to market its products in Massachusetts. "With the interstate highway system now virtually 99% complete, we feel we can cover an area bounded by North Carolina in the south, Illinois in the west, and New Hampshire in the north right out of our Pembroke headquarters," declared Peter Paulson, President of Percy. Percy's new distribution system will take effect in October.

<FF>

```
ADD/PAGE 1405.

GENERIC INDUSTRIES, INC.

Trade Show Schedule

Date                  Show

05-07 Jun 89          New York Society of Accountants,
                      New York, NY

07-09 Jun 89          International Society for Automation,
                      London, England

19-21 Jun 89          National Office Products Merchants Association,
                      Reno, NV

26-29 Jun 89          Office Products Retailing of America,
                      Washington, D.C.
<FF>
ADD/PAGE 18./TYPE=MENU
CHOICE 1 1800.
CHOICE 2 1801.
CHOICE 3 1802.
CHOICE 4 1803.
CHOICE 5 1804.
CHOICE 6 1805.
TITLE "Product Information Menu"
KEYWORD PRODUCTS
---


GENERIC INDUSTRIES, INC.

Product Information

1  Gum Eraser                 4  Graphite Pencil
2  Steel Paper Clip           5  Standard Steel Staples
3  Ball Point Pen             6  Steel Thumb Tack

<FF>
ADD/PAGE 1800./OPTIONS
TITLE "Gum Erasers"
KEYWORD PRODUCTS
KEYWORD ERASERS
---


                    GENERIC INDUSTRIES, INC.

PART NAME:          Gum Eraser
PART NUMBER:        117-35246-220
QUANTITY:           12 per Box
COST:               $1.29 per Box
LEAD TIME:          4 Days
DESCRIPTION:        1" x 3", beveled edges.
```

```
<FF>
ADD/PAGE 1801./OPTIONS
TITLE "Steel Paper Clips"
KEYWORD PRODUCTS
KEYWORD CLIPS
KEYWORD "PAPER-CLIPS"
---

                    GENERIC INDUSTRIES, INC.

PART NAME:          Steel paper clip
PART NUMBER:        134-27916-914
QUANTITY:           100 per Box
COST:               $0.27 per Box
LEAD TIME:          10 Days
DESCRIPTION:        Box weighs approx. 4 oz.

<FF>
ADD/PAGE 1802./OPTIONS
TITLE "Ball Point Pens"
KEYWORD PRODUCTS
KEYWORD PENS
KEYWORD "BALLPOINT-PENS"
---

                    GENERIC INDUSTRIES, INC.

PART NAME:          Ball Point Pen
PART NUMBER:        739-69852-377
QUANTITY:           12 per Box
COST:               $1.19 per Box
LEAD TIME:          3 Days
DESCRIPTION:        Blue ink, medium point

<FF>
ADD/PAGE 1803./OPTIONS
TITLE "Graphite Pencils"
KEYWORD PENCILS
KEYWORD PRODUCTS
KEYWORD "LEAD-PENCILS"
---

                    GENERIC INDUSTRIES, INC.

PART NAME:          Graphite pencil
PART NUMBER:        002-64253-189
QUANTITY:           12 per Box
COST:               $1.14 per Box
LEAD TIME:          2 Days
DESCRIPTION:        Wood pencil, 8" long, yellow, eraser at top.

<FF>
ADD/PAGE 1804./OPTIONS
TITLE "Standard Steel Staples"
KEYWORD PRODUCTS
KEYWORD STAPLES
KEYWORD "STEEL-STAPLES"
---
```

```
                    GENERIC INDUSTRIES, INC.

PART NAME:          Standard Steel Staples
PART NUMBER:        637-46573-526
QUANTITY:           5000 staples per Box
COST:               $0.54 per Box
LEAD TIME:          1 Day
DESCRIPTION:        Chisel-pointed for easier penetration

<FF>
ADD/PAGE 1805./OPTIONS
TITLE "Steel Thumb Tacks"
KEYWORD PRODUCTS
KEYWORD TACKS
KEYWORD "THUMB-TACKS"
---

                    GENERIC INDUSTRIES, INC.

PART NAME:          Steel Thumb Tack
PART NUMBER:        444-10226-549
QUANTITY:           100 per Box
COST:               $0.43 per Box
LEAD TIME:          7 Days
DESCRIPTION:        Depth of tack is 1/2"

<FF>
```

Appendix B

DECtalk Page Design Tips

If you are using DECtalk in your VTX application, you should consider the differences between spoken and written information, and how people perceive and retain the two kinds of information. The following are suggestions for the effective design of DECtalk infobase pages. The suggestions are based on a reasonable amount of internal testing by VTX/DECtalk users.

- Keep the information on a VTX DECtalk page short and concise. Remember that users at the other end will listen to this information once and try to retain what is said. Users are more likely to remember short, concise messages than lengthy ones.
- Offer no more than three choices on a DECtalk menu. Experience shows that most people cannot remember more than three menu choices; any more than that only confuses or frustrates users. For additional help, you might end a menu page with a message reminding users to use the REFRESH function if they want to hear a page again.
- End all sentences and phrases with periods. If you do not, the text will tend to run together. Use commas where you would typically want to insert a pause in the text. DECtalk will then pause briefly at the comma, just as one would when reciting a sentence that had commas in it.
- Have DECtalk speak in the first person (I, my, me). For example, if you want to tell users to enter a particular key sequence to repeat the last page of spoken text, you can have DECtalk say:

  "If you want me to repeat this page, please enter pound sign zero."

  Use of the first person will make the conversation appear more natural.
- Be polite when writing the text. Use the word "please" when DECtalk is asking for some type of input. This makes the interaction more personal.

- Vary the DECtalk voices to indicate different types of information being conveyed. For example, use one voice to read the contents of a page, and a different voice to report VTX error conditions (such as "invalid entry"). This way, listeners quickly recognize errors.
- When offering menu choices, present the general information first, and then give the specific instructions on what key to press. For example:

  "To go back to the beginning of this demonstration, enter pound sign one."

  Because the specific action of pressing the pound sign - 1 key sequence is mentioned at the end of the sentence, users are more likely to remember the instruction than if they had heard it at the beginning of the sentence.

Glossary

This glossary contains definitions of terms used in the VAX VTX documentation set.

account determination

The process that a server uses to select VTX accounts from which subscribers can initiate sessions. Account determination is an important factor in billing, page security, logging, and base page determination.

account file (VTXACF.VTA)

The file that controls page access by VTX subscribers. The information in the account file determines whether or not a subscriber or information provider will be allowed access to VTX.

base page

A page serving as a point of entry for one or more VTX subscribers. A subscriber's base page can be assigned because of security, terminal type, language preference, or a number of other considerations. The base page specifies the first and highest page that a subscriber will see in the VTX infobase hierarchy.

base page determination file

A file that directs subscribers, as they log in to VTX, to an assigned or default base page.

bookmark

A feature that allows subscribers to mark a page they are viewing so they can recall the page directly in a later VTX session.

closed user group

A security designation that can be assigned to a VTX page to restrict subscriber access to that page. To access a page that has been assigned a closed user group number, subscribers must have a matching closed user group number assigned to their VTX accounts by the VTX operator.

cluster alias

A node name that identifies a VAXcluster. For example, a VAXcluster of three nodes (ADMIN, FINAN, and SERV) might have a cluster alias node name of CORP. A cluster alias name entered in the VTX account control file or the base page determination file allows the user access regardless of which node on the cluster the user logged into.

collection

A set of page action requests and page control information created by an information provider using the VTXUPD Utility.

concentrator

The program that gives one VMS process control of multiple terminals using VTX.

context-sensitive keyword

A keyword whose search is restricted to the set of pages (the context) in which the keyword is defined. Context-sensitive keywords are assigned to a local keyword file.

continuation page

An infobase page that contains information continued from a previous page. Continuation pages are designated by up to five digits (to a maximum value of 32767) after the decimal point of the first page of a document. For example, the "00011" in page number 303.00011 indicates that this page continues the information from page 303.00010.

current prefix

The page prefix value for the session. Only pages whose prefix matches the current prefix can be updated. You can set the current prefix with the SET, CREATE, CONNECT, UPDATE, or OPEN operations in the VTXUPD Utility.

current range

The range of page numbers that can be affected by page operations during the session. The current range limits page operations. You can set the current range with the SET operation in the VTXUPD Utility.

DDIF

Digital Document Interchange Format – the compound document architecture standard interchange format for revisable compound documents.

display page

A page that presents information on the VTX subscriber's terminal screen but that cannot accept input from the subscriber, as can menu and form pages.

document

A primary page and all continuation pages.

duplicate keyword

A keyword that is assigned to more than one page. When a subscriber enters a keyword that is a duplicate keyword, VTX displays a dynamic menu of the pages that match the keyword.

dynamic menu

A menu automatically generated by VTX during a keyword search when more than one page matches a specified keyword. The dynamic menu lists the titles of all the pages to which that keyword points.

extended VTU file

A file similar in structure to a VTU file except that each page in the file is identified by a unique name (page group name and page tag) instead of a page number. An extended VTU file is usually created by an automatic preprocessor, although since it is an ASCII file, it can also be created with a text editor (such as EDT, WPS-PLUS, TPU). The VTXAPMS Utility processes the extended VTU file and creates from it a standard VTU file, with page numbers, that can be input to the VTXUPD Utility.

failover local server

A server logical name defined at the system level. It allows subscribers to be automatically connected to another local server if the communication link to their primary local server is unexpectedly broken.

failover remote server

A remote server logical name defined in the VTXCTL Utility. It allows subscribers to be automatically connected to another remote server, or application, if the communication link to their primary remote server is unexpectedly broken.

field

A contiguous group of characters, treated as a single item, that is displayed on a form page.

form page

A type of page that lets subscribers enter information in fields and send the information (also called formdata) to a VTX application for processing.

generic keyword

A partial keyword that ends with an asterisk (*). For example, a subscriber might enter FIN* to locate pages that have the keywords FINANCE and FINAL.

global keyword file

The default keyword file. This file has a page range of 0 to 9* and contains keywords that are not context-sensitive.

group code

A security designation that can be assigned to a Workbench page to restrict read and modify access by Workbench information providers. To access a page that has been assigned a Workbench group code, Workbench information providers must have a matching read or modify group code number assigned in their information provider account by the VTX operator.

guest account

An account in the VTXACF.VTA account file that allows any VMS user on any node in the network to read the pages in the section of the infobase managed by the server that has allowed the guest account.

header file

A template file that contains pagination information used to prepare WPS-PLUS documents for submission to the VTX print queue.

home server

The same as the frontmost server. It is the server to which a subscriber originally connects when starting VTX.

index

A VTXAPMS Utility term that is synonymous with *menu*.

index assignment file

A reference file used by the VTXAPMS Utility that contains a page number and other characteristics for each menu the utility creates.

infobase (information base)

All of a corporation's information that is accessible by VTX. An infobase includes all the page and keyword files on all the nodes within a corporation's VTX service.

infobase designer

An individual or a team who plans the logical structure of the infobase.

information provider (IP)

A person or agency that gathers and formats information for inclusion in a VTX infobase.

interactive updating

See *online updating*.

keyword

A string assigned to a particular infobase page. Subscribers can use keywords in combination with the FIND function from the VTX keypad for quick retrieval of pages.

keyword file (VTK file)

An indexed file containing keywords that point to page records in the page files. Keyword files are often referred to as VTK files because .VTK is the file type.

list menu page

A menu page intended for use with the DECwindows TSM that allows subscribers to use a mouse to select menu choices. List menu pages also can be displayed on character-cell terminals.

Local Area Transport (LAT)

A communications protocol used in a local area network. VTX provides LAT support for VTX concentrators on selected DIGITAL terminal servers.

local keyword file

The keyword file that has a page range that is a subset of the range 0 to 9*. Keywords in this file are context-sensitive.

local server

The server and the subset of the infobase that resides on the subscriber's computer node. Also called the home server.

local session

A VTX session in which a VTX subscriber's terminal control program is connected to the local VTX infobase server.

loadfile

An ASCII text file that contains the WBCL commands ADD, MODIFY, and DELETE. These commands specify page control and display information used to update the infobase. A loadfile is processed by the Workbench Utility.

login page

An optional security feature that restricts subscriber access to VTX. If implemented, users who want to run VTX must be recognized as subscribers or they must complete a login page.

menu page

A VTX page that offers subscribers choices for selection of additional pages.

menu structure

The VTX main menu and all pages that it points to either directly or indirectly, such as remote pages.

NAPLPS

A graphics protocol (see PLP). The acronym stands for North American Presentation Level Protocol Syntax.

node

An individual computer system in a network that can communicate with other computer systems in the network.

online updating

The process of changing the contents of a VTX infobase while subscribers are reading its contents.

options file

A template file that contains page formatting information used to customize text files that are to be submitted to the VTX print queue.

output file

A file that is created when a WPS-PLUS document, text file, or DDIF document is sent to the VTX print queue to be paginated. There are three types of output files:

- Workbench—for documents to be published with the Workbench WPS-PLUS or PRINT Q option
- VTU—for documents to be published with the VTXUPD UPDATE command
- APMS—for documents to be processed with the VTXAPMS SUBMIT command

page

A unit of VTX display information consisting of a screen display and page control information. The display is what a subscriber sees at a VTX terminal. The page control information can include page number, page type, PLP type, keywords, page creation date, and so on.

page assignment file

A reference file used by the VTXAPMS Utility to define a prefix and a maximum number of pages for each page group name.

page control information

The portion of the page that defines the attributes of the page. Page control information includes the page number, page type (menu, display, form, template, or remote), protocol, and so forth. The page control information becomes part of the page's record when the page file is updated.

page file (VTD file)

An RMS indexed file containing records of the page control information and display information for each page in the infobase section. You can have many page files for each server. A page file is sometimes referred to as a VTD file because .VTD is the file type.

page group name

A name the information provider assigns to a set of pages in the VTXAPMS Utility. Each page group name in the page assignment file has a prefix to which the utility attaches a unique page number for each page in the group.

page image

The portion of the page that is displayed on the VTX subscriber's terminal.

page number

The key to a page in the infobase. Page numbers in VTX are organized according to the ASCII sort sequence. Each page number must be unique within the section of the infobase managed by one server.

page tag

A string of characters assigned to a page before it is transmitted electronically. The VTXAPMS Utility uses the page tag to increment a counter within the page group, thus making the page number unique.

personal magazine

A menu of frequently accessed pages that the VTX subscriber defines. Subscribers enter the number and the title they want to assign to the page by filling in a personal magazine form. (This feature is sometimes referred to as *personal menu*.)

PLP

Presentation Level Protocol. One of a number of defined standards for communication of display information between an application and a terminal. Among the common PLPs are CEPT, NAPLPS, and Prestel.

prefix

The first digit, or digits, in a page number that help determine the page number's place in a VTD file relative to other page numbers in the file. For example, page numbers 10., 100., 1000., and 1001., as a group, have the same prefix—the digits "10".

prefix file

Contains the prefixes used to generate page numbers for newly-created Workbench pages.

primary page

The first page in a document that also has continuation pages.

primary server

The server, local or remote, that is most often used. You can define failover local servers and failover remote servers as a backup to the primary server.

remote page

A type of page that, rather than containing information, activates a communication link to a remote server or process.

remote server

Any VTX server, within the corporate infobase, that is not a particular subscriber's local server.

routed session

A VTX session between a subscriber and a remote process. In such a session, the subscriber's local server simply conveys messages between the subscriber and the remote process.

server

The process that controls access to an infobase of VTX pages.

session

The context established when a terminal control program communicates with a VTX server process. See *local session* and *routed session*. When used in the *VAX VTX Information Provider's Guide*, the term *session* means the update session that is started when an information provider runs either the VTXUPD Utility or WBGI.

shared infobase access

An environment in which the VTX server allows both retrieval and update of infobase pages.

source server

The home or local server to which a subscriber is connected when a remote page is selected.

storyboard

A pictorial representation of the structure of an infobase.

style file

A file that defines the format or style of menus dynamically generated by the Workbench utility.

subordinate menu

A menu available from a primary VTX option. Subordinate menus offers options related to the primary option.

subscriber

Someone who uses the VTX service to retrieve information.

target server

The remote server to which a subscriber will be connected when a remote page is selected.

TCP

See *terminal control program.*

template page

A page of static text that can be displayed with any other type of page to produce a combined image on the subscriber's screen. Information providers type in static information (for example, a company logo) only once; they are then able to use this template page with as many display pages as needed.

terminal control program (TCP)

The program that delivers VTX page requests from a terminal to the infobase server. It also delivers page information from the infobase server to the requesting terminal.

terminal-specific module (TSM)

A portion of the terminal control program (TCP) designed to handle one of the terminal types supported by VAX VTX.

TSM

See *terminal-specific module.*

update server

A process that functions similarly to the server except that its purpose is to allow selected information providers to update selected pages managed by a remote server.

utility

A program designed to help you do a specific task or set of tasks.

VAX VTX

A corporate information system that provides the tools for distributing documents and other information electronically.

videotex

The generic name for a computer-based information retrieval service. A videotex service is characterized by a hierarchical infobase structure and an easy-to-use subscriber interface.

VTD file

See *page file.*

VTK file

See *keyword file.*

VTU file

An ASCII text file containing ADD and DELETE commands and page control and display information that is used to update the page and keyword files in the infobase.

VTX operator

The person assigned to maintain the integrity and proper operation of the VTX system. The operator maintains user accounts, opens and closes infobase files, starts the server and concentrator processes, and can perform online infobase updates.

VTX print queue

A print queue intended for formatting and paginating documents for VTX publication. The VTX print queue creates a Workbench, VTU, or APMS output file, according to the VTX utility specified for the file's use.

VTXACU Utility

The VTX Account Control Utility, which the VTX operator uses to manage information provider and subscriber accounts and Workbench prefixes.

VTXAPMS Utility

The VTX Automatic Page Management System Utility, which information providers can use to assign page numbers and create menus automatically. It is designed specifically to be used for information being transmitted electronically.

VTXCTL Utility

The VTX Control Utility, which the VTX operator uses to manage communications, to open the page and keyword files for subscribers to access, and to manage VAS applications.

VTXIVU Utility

The VTX Infobase Verification Utility, which the VTX operator uses to identify pages that have become stranded in the infobase.

VTXUPD Utility

The VTX Update Utility, which information providers use to create and maintain pages and keywords in the infobase.

WBCL

See *Workbench Utility.*

WBGI

See *Workbench Utility.*

WLF file

See *loadfile.*

Workbench library

A collection of four files (Workbench control file, prefix file, update control file, and update information file) that the Workbench server uses to maintain an infobase.

Workbench server

The server that manages communications with the Workbench library to maintain the infobase. It also handles communications for any number of information providers as they update the infobase from the Workbench Utility.

Workbench Utility

A tool that allows information providers to easily create and maintain the infobase. The Workbench provides two interfaces: WBGI, an interactive graphical interface, and WBCL, a command statement interface

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